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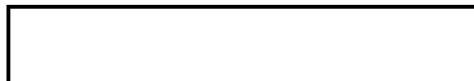
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DIRECTORATE OF  
INTELLIGENCE

# Intelligence Handbook

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**BOLIVIA**

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HSO No. 12  
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## W A R N I N G

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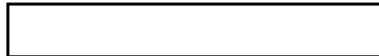




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INTELLIGENCE HANDBOOK  
FOR



BOLIVIA

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FOREWORD

The writing of this Handbook [redacted] commenced while Rene Barrientos still served as President of Bolivia. His untimely death in a helicopter crash in April 1969 triggered a struggle for power which led to military seizure of the government less than six months later.

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This Handbook describes the land and people of Bolivia where history has witnessed violence, turmoil, and a monotonous succession of such struggles for power.

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The Handbook also synthesizes information from many sources on those features of Bolivian national life [redacted]

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[redacted] It describes physical and sociological factors which have shaped the country's development and seeks to provide an understanding of the Bolivian people -- their attitudes and values, and their relations with the outside world, particularly the United States.

A variety of classified and open sources was used in writing this Handbook. The NIS General Survey, Bolivia, March 1968, augmented by contributions from specialists in the fields of economics, geography, health, population, telecommunications, and transportation, provided the basic text.

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## PART I

### THE SETTING

#### I. History of Violence

##### A. Revolutions and Insurgency

Bolivia's history is a melancholy but turbulent story of insurgency, revolution, and dictatorship. The unsettled political conditions, often marked by violence, which we witness today in Bolivia are a continuation of the long history of the instability which this troubled country has suffered. While the activities of Che Guevara, as part of an international conspiracy, caused world attention to focus briefly on Bolivian troubles, he was but the latest of a series of adventurers and power seekers who sought to overthrow the established government.

The first recorded revolution in Bolivia took place around 1470 when the Aymara tribes rose against the Incas, who had invaded the country some 20 years earlier. The Spanish arrived on the scene in 1538 and, after subduing the Indians, began to fight for power among themselves. The discovery of silver at Potosí in the mid-1500's led to virtual enslavement of the Indians who worked the mines under inhumane conditions, causing a legacy of hatred which still underlies Bolivian politics. In 1780 Tupac Amaru, capitalizing on Indian hatred for their oppressors, mobilized the Indians of the Peruvian and Bolivian Andes in an effort to expel the Spanish and restore the Incan empire. After besieging La Paz for over 100 days, the Indian forces were defeated and brutally subjugated. The effect of the rebellion was to further polarize the Bolivian population by creating a sense of unity and identity among the Indians and convincing the Spanish that the Indians should be rigidly suppressed and excluded from their society.

Napoleon's invasion of Spain and appointment of a puppet king for Spain and its colonies in the early nineteenth century caused further division in Bolivia. Some of the populace supported the new ruler, others clung to the old Spanish dynasty, and still others stood for complete independence from Spain. Independent military forces developed in the larger Bolivian cities.

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The Spanish monarchy, restored after Napoleon's defeat in 1814, made the error of setting aside certain laws which had favored the colonials, thereby accelerating their growing resentment against the crown. By 1825, conditions in Bolivia had so badly deteriorated that marauding troops were plundering throughout the country. At this point, Simon Bolivar sent Marshal Sucre with Peruvian troops against the remaining Spanish forces. After a bloodless campaign, a Declaration of Independence from Spain was issued on August 6, 1825. The delegates who met to form a new government placed their individual ambitions above national unity. Bolivar, accordingly, assumed dictatorial power in order to impose unity. His rule was followed by that of Marshal Sucre who soon was deposed in a revolt led by the dictator of Peru. A president installed by the Peruvians was assassinated five days later, and the Bolivians then elected their first native-born president, Andres Santa Cruz.

Bolivia's next forty years were marked by intrigue and revolt caused by public lack of confidence in the leadership which had lost national territory in two wars: one with Chile over the Pacific ports, and the other with Paraguay over the Gran Chaco.

After the war with Paraguay there was a series of disturbances. Colonel Toro, leading a military coup, overthrew the Constitutional Government in 1936. He was forced into exile a year later, and his successor, Colonel Busch, committed suicide in 1939. General Bilbao, the next President, was physically beaten and forced to leave the country by his former supporters when he insisted on holding a constitutional election. President Villaroel was shot and hanged in La Paz in 1946, and Victor Paz Estenssoro fled the country. Their party, the National Revolutionary Movement (MNR) was outlawed, but in August 1949, made an attempt to overthrow the regime. The MNR was voted into power in 1951, but a junta intervened and Paz Estenssoro was not allowed to return from exile.

In 1952, the junta was overthrown in a popular revolution and Estenssoro returned as president. His government was committed to a profound social revolution announced in three decrees: 1) The expropriation and nationalization of the tin mines; 2) Universal suffrage without literacy or income requirements; and 3) Land reform, including redistribution of the large estates. Through this program power was taken from the white minority and given to the Indian majority.

Estenssoro and the MNR dominated Bolivia's political life for the next ten years. He ran for re-election in 1964, but

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the MNR was splintered so badly that the military forced him to accept General Rene Barrientos Ortuno as his running mate. Although he won the election, public reaction to his handling of the "November Revolution" forced his resignation. Anti-government riots broke out in mining towns and peasant centers, and Paz Estenssoro was forced to leave the country. A military junta, led by Barrientos and General Alfredo Ovando Candia, seized control of the government and the MNR collapsed. To justify its seizure of power, the military asserted that the MNR had betrayed the ideals of the revolution.

Barrientos and Ovando served as co-Presidents until 6 August 1966 when Bolivia returned to civilian constitutional rule with the inauguration of Barrientos as President. Until his death in a helicopter crash on 27 April 1969, Barrientos dominated the Bolivian political scene and enjoyed widespread popularity. He attempted to unify the country and to create an environment for stability and progress.

Vice President Luis Adolfo Salinas succeeded to the presidency but held office only five months. It was inevitable that eventually he would collide with the Armed Forces. Holding to a strict legalistic interpretation of the Constitution, he consistently took positions unacceptable to the military leaders. He succeeded also in alienating important elements of the Congress and his own party. On 26 September 1969 the Bolivian Armed Forces seized the government and installed their Commander-in-Chief, General Ovando, as President. Ovando apparently had decided that Siles would work against his candidacy in the 1970 election and further hesitation might weaken his chances to lead the military to power.

The new "Revolutionary Government" issued a 19-point proclamation that reflected its nationalistic and leftist orientation. Among its more significant features, this proclamation called for agrarian reform, state ownership of basic industries and natural resources, accelerated rural development, a new concept of social justice, and a "nationalistic moral revolution." Although the United States recognized the new government on 10 October, the strong anti-American attitude of the Ovando regime became evident almost immediately. Its nationalization of the American-owned Bolivian Gulf Oil Company was followed by demonstrations calling for expulsion of AID and the Peace Corps, and threats against other American companies operating in Bolivia.

As of this writing, it appears that the center of the Bolivian political system is moving rapidly to the irrational



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nationalist left. General Ovando himself, as leader of the junta, has been characterized as having no deep political convictions and being prepared to work with any element to advance his position. The expropriation action indicates that a radical faction in the cabinet has gained the upper hand and can be expected to lead the government along a more extremist course. There is conviction in some quarters that the nationalistic trend may gain further momentum and bring grave consequences for the nation's economy. Some observers see no hope for a deteriorating situation which can lead only to a series of coups and counter-coups. It appears that the key problem now facing the nation is the absence of leaders of sufficient stature to discipline an increasingly anarchic political scene, and bring order and reason to the Bolivian government.

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## BOLIVIA: GUERRILLA OPERATIONS



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B. Che Guevara's Adventure

A key feature of Castro's plan to carry out subversion throughout Latin America was his attempt in 1966-67 to establish in Bolivia a guerrilla warfare base under Ernesto "Che" Guevara's leadership. Captured diaries and other documents, supplemented by interrogation of prisoners who participated in the operation revealed the theory, strategy and tactics which Havana had adopted to implement its hemisphere-wide policy of armed revolt. They also exposed the conflict between Castroism and the pro-Soviet Communist parties over control of the Latin American struggle. (See map 77461)

Che Guevara, one of Castro's lieutenants, who had acquired international prestige by virtue of his prior service in Guatemala, Cuba and the Congo, was selected to lead the Bolivian operation. He stood as a paragon of dedication to the international proletarian revolutionary cause, and a myth of his invincibility had grown up in leftist circles.

As early as 1965, Cuban leaders had begun to collect information and make plans for exporting their guerrilla movement to the mainland. Early in 1966, Castro selected Bolivia as the country best suited for launching his attack. From his viewpoint, Bolivia was a geo-political center from which the National Liberation Movement could be spread into Peru, Chile, Paraguay, Brazil and Argentina. The terrain of south-eastern Bolivia seemed ideal for guerrilla operations, and the country, weakened by economic and political problems, appeared to offer the most favorable conditions for insurgency.

The operation would carry out the doctrine advocated by Castro, Che and Jules Regis Debray, a young French Marxist theoretician -- that the real revolution must originate as a guerrilla movement in the hinterland -- it cannot be effected by city-bred "revolutionary" parties. They would repeat the Cuban experience in which the guerrillas, operating from the countryside, would demonstrate the impotence of the central government, win the support of the oppressed, and cause the development of a truly revolutionary political party.

In early 1966 Che had returned secretly to Cuba from his disappointing Congo experience. He selected about 20 Cubans experienced in guerrilla warfare and trained them for the projected Bolivian operation. The organization was to consist of action units in the mountains supported by city-based elements. A five-man advance party left Cuba in July and flew

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to La Paz by way of Prague. In La Paz support was provided by Rodolfo Saldana, a member of the outlawed pro-Soviet Bolivian Communist Party (PCB/S). He served as a communication channel with Havana; made surveys, provided supplies, weapons and false documents; and was responsible for recruitment of students and couriers. He also promoted support from Argentina and incorporated Peruvians into Che's force. Saldana received \$40,000 from Havana to finance these activities.

After preparations for the Bolivian operation were completed, Che left for Bolivia. He arrived in La Paz on 3 November 1966, disguised as a Uruguayan businessman -- bald and wearing hornrimmed glasses. Che travelled by jeep from Cochabamba and then by foot to reach the base camp about 40 miles north of Camiri at Nancahuazu. There he directed short reconnaissance marches and had caves dug for storing food and supplies. In December, Mario Monje, General Secretary of the PCB/S, came to Che's camp to demand that he be recognized as the political and military leader of the revolutionary struggle in Bolivia. The real issue was whether the Cubans would lead a united front of all parties in Bolivia or whether the parties would control their own activities. Che rejected Monje's demand. Negotiations broke down, the PCB/S's Central Committee refused subordination to political direction from Che's command, and Che and his 12 guerrillas were left without Soviet Communist Party backing.

On the first of February 1967, during a season of heavy rains, Che and 30 of his men began a long training march. They crossed the Rio Grande with great difficulty and, continuing northward for about 20 miles, made their way through the foothills of the Eastern Andes. Forced to rely on poor maps, they lost their way and for two weeks wandered up and down creek beds and climbed rocky slopes. At this higher elevation, Che suffered a painful lung condition and his band was wracked by starvation and disharmony. The local Indian populace either chose to ignore the guerrillas and their message of "liberation" or refused to cooperate with them.

On 23 March the Bolivian nation was shocked to learn that Che's band had ambushed an Army patrol. On 10 April Bolivian Army forces were moved into the guerrilla camp area but suffered 19 casualties. Just as Che was preparing to issue his manifesto on the "National Liberation Army of Bolivia", the tide turned against him. On 17 April the guerrillas split into two groups, one under Che's command, the other under Joaquin. Late in April the Army captured three individuals -- Debray, Bustos and Roth --

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to whom Che had assigned the task of enlisting international support for the Bolivian guerrilla movement. About this time, also, Che lost radio contact with Havana and was limited to slow courier service. During May and June the guerrillas numbered about 50 men but two or three were lost at each engagement with the Army. Prompt action by President Barrientos blocked miners' support for the revolution on which Che had counted.

Che's guerrilla action climaxed on 6 July when his band took over the Army garrison at Samaipata. Soon thereafter, plagued by desertion, sickness and loss of equipment, Che's remnants faced defeat. The final skirmish took place on 7 October 1967 when Che was wounded and taken prisoner. Two days later he was executed. Of those who formed his guerrilla band, only five survived. Two years later, on 9 September 1969, his chief lieutenant Guido "Inti" Peredo was killed during a clash between the police and ELN members in La Paz.

Che's campaign was doomed to failure from the start. Castro's brand of revolution was not acceptable in Bolivia and his assessment of Bolivia's President, its people and Army was unrealistic. Guerrilla relations with the Communist parties of Bolivia were marked by distrust and the local parties supported Che only to the extent that it did not interfere with their own plans and activities. They refused to make their personnel available in any organized manner to the guerrilla band. Che, for his part, stubbornly refused to cooperate with those whose support he needed. He failed completely in his attempt to gain the sympathy of the local campesino population upon which he counted to sustain his struggle. He was unable to coordinate his efforts with students and workers. He was incapable of bringing about harmony between the Cubans and other members of his guerrilla group. Che, in other words, was not the leader he claimed to be. Although he had planned a long-term organizational effort of recruitment, building of support elements, and reconnaissance of operational areas, his band's violations of good security practice forced it into premature action against the Army. He had developed no alternative plan and had not worked out a satisfactory intelligence collection system. His support network of communications, logistics and recruitment began to crumble when fighting commenced. Che's death and the destruction of his movement was a serious blow to Castro and enhanced the position of both the Soviet and Chinese Communist oriented elements of the Communist parties in Bolivia and other Latin American countries.

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An intriguing footnote to this tale was the role played by one Tania, (nee Haidee Tamara Bunke). Argentine by birth, she moved to East Germany at 17 years of age. While attending college, she was recruited by the intelligence service of the German Democratic Republic to penetrate Castro's movement. She moved to Cuba and preceded Che to La Paz when Castro decided to center his guerrilla movement in Bolivia. It was Tania who brought Monje to Che's camp to discuss the direction and leadership of the revolution. In March 1967 she brought Debray and Bustos to the camp but, on this trip, left her jeep in Camiri with compromising evidence that alerted Bolivian authorities. From that time on she remained with Che, finally dying in a river crossing ambush set by the Bolivian Army. The fascinating question about Tania remains unanswered: was it her emotional attachment to Che which led her to commit grave breaches of Communist discipline, or was she obeying orders from Moscow to betray Che's mission in Bolivia at the cost of her own life?

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## II. The Contemporary Scene -- A Nation in Transition

### A. Characteristics of National Life

Bolivian society is in a state of flux characteristic of a nation seeking political maturity but still operating on a primitive socioeconomic and cultural base. The diverse elements of the population have not yet been welded together behind clear and common goals. The Revolution of 1952 awakened the social and political consciousness of the masses, sharpening their aspirations for a better life. The fundamental purposes of that revolution were to integrate the Indians into full citizenship, create conditions requisite to raising living standards, and solidify the bases of democracy in the process of achieving these purposes.

In spite of considerable progress toward attainment of these revolutionary aims, Bolivia lacks a national consensus and many segments of society remain reluctant to accept the orientation of the revolution. While its goals are publicly endorsed by all major parties, the central issue of politics is the future course the revolution will take and how it will further the self-interest of the many conflicting social and economic groups. The revolution drastically shifted the concentration of wealth and power, destroying the monopoly of the elite, but brought unrest and instability in its wake. The lower classes, divided by their ethnic, linguistic and class differences, are disillusioned by the inability of Bolivia's leaders to fulfill the revolutionary promises. The old elite still maintains a high degree of social and ethnic self-consciousness.

Bolivian society is highly personalistic, and undercurrents of suspicion and antagonism are directed at individuals, institutions and social classes. Behind a facade of government stability and party unity, the many discordant ethnic, regional and economic elements are held in tenuous balance by manipulation, patronage and bargaining among groups of political strongmen. National development is inhibited by an absence of general support for any given order, be it the system of government or basic socioeconomic principles. Political and economic factionalism slow the effective implementation of programs designed to unite the nation and meet the aspirations of its people. The government must cope with a myriad of functional pressure groups -- campesinos, bureaucrats, miners, urban factory workers, students, private entrepreneurs and intellectuals. The most stabilizing force is Bolivia's military class which has achieved

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a high measure of popular acceptability and which plays the dominant role in government. Unified, and led by officers dedicated to the reformist principles of the revolution, the Army is deeply involved in modernizing and strengthening the socioeconomic structure.

While progress has been made toward national political unity, there are natural, ethnic and economic forces which continue to divide the nation. Bolivia faces complex and vexing problems which appear to defy solution. The country's terrain and climate create unsurmountable barriers to effective communication and understanding among the people and separate them from their government. Villagers, isolated by geography, persist in their peculiar cultural, ethnic and historic patterns and prejudices. A particularly troublesome situation exists in the deeply rooted heritage of regionalist conflict between the isolated Santa Cruz region and the cities of the highlands, traditional centers of economic and government power. Sessionists by nature and history, the people of Santa Cruz presume a racial and cultural superiority over the residents of the Altiplano whom they accuse of political and economic exploitation.

The political landscape is dominated by the competition among political leaders for the support of the dominant classes of society, particularly the campesinos, miners and urban lower classes. Comprising approximately 65 percent of all Bolivians, the Indian campesino population has a strong potential in the political life of the nation. Although the campesinos do not yet comprise a cohesive element in society, they are reconciled to a degree on the national level. These "workers of the countryside" are organized into the National Confederation of Rural Workers of Bolivia (sindicatos) and claim over two million members affiliated with the national trade union federation. The most important political aspect of the sindicatos is their support of armed militias but they also are used as an effective avenue for the expression of rural initiative. The power of the rural sindicatos has been so great that political leaders of great prominence have been drawn into sindicato politics.

Miners and other more urbanized industrial workers constitute a second group of great political power. This group has an awareness of common interest and class consciousness deriving from a history of labor strife and denial of social and economic opportunity. Labor unions often serve as

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local civic associations in concert with neighborhood councils, women's groups and sports teams, thereby establishing ties which cut across occupational specialities. The union worker, united within his own group, tends to separate himself, however, with respect to other social groups.

The middle class is a somewhat less important political target. Comprising the urban merchants, white-collar workers, professionals, government bureaucrats, and students, this class has attempted to distinguish itself from the lower classes and to have its status acknowledged. More than any other, this group has given rise to social and political radicals and many of its members have assumed positions of leadership in radical movements of the right and left. The most politically active group of the middle class is the students who have two major organizations, the Federation of University Students and the National Confederation of Students.

The nagging economic problems which Bolivia faces today derive from the anomalies to which the country fell heir: a deformed national economy, an exaggerated dependence on foreign markets and international commodity prices, a high percentage of the population engaged in subsistence agriculture and existing outside the money economy, lack of trained manpower and managerial competence, and an inability to generate internal savings for development.

One of the most fundamental problems which the nation faced following the revolution was the establishment of a viable framework for national decision-making. This became increasingly critical as the government expanded its control over the working of the economy. The government assumed responsibility for maintaining economic and monetary stability, providing education and training, operating the nation's most important sources of wealth, enacting and enforcing labor standards, providing social welfare services, and regulating labor management relations. Sharp disagreement developed between the government and organized labor on the orientation and aims of the revolution, contributing to the economic upheaval which has characterized the period since 1952. The destruction of the stable, if underproductive, agrarian system produced economic chaos, and a host of difficulties followed nationalization of the mines. In its hasty reorganization of the economy, the government failed to formulate sound plans for industry, labor and agriculture. Investors were left without guarantees of payment; industrial leaders were shorn of their managerial powers; urban

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labor and mine workers received higher salaries with little regard for increased efficiency; land reform and its enforcement was weak; and inflation persisted along with budget deficits.

Instability in the economy has been caused by the wasteful operations of state enterprises, expansion of welfare programs beyond the resources of the government, favoritism toward organized labor, and widespread corruption and inefficiency in administrative practices. When economic choices have been made, too often the preferred solution has been that which promised quick gains to partisan, regional or individual interests rather than to national goals.

In spite of its extensive mineral and petroleum resources, Bolivia remains one of the poorest countries in Latin America. Per capita income is second lowest (after Haiti) in the Western Hemisphere. Although the economy grew at an average annual rate of more than 5 percent from 1961 through 1967, its ability to continue to maintain a reasonably high growth rate is dependent on several factors beyond Bolivia's control. One such factor is international tin prices. Bolivia's heavy dependence on exports of tin has subjected the economy to severe fluctuations in export earnings as world demand for the metal has changed. Another essential factor is its ability to attract the large amounts of foreign capital needed to develop the rich mineral and petroleum resources. To some extent, government incentives to foreign investors and the maintenance of political stability will determine whether such capital will be forthcoming in the required amounts. Agricultural development, which will require the use of improved technology in the overpopulated highlands, combined with emigration to the underpopulated eastern lowlands, is made difficult by the Indian farmer's centuries-old cultural attitudes and his irresponsiveness to economic incentives.

B. Bolivia's Place in the World

The character of Bolivia's foreign relations has had a major impact on the country's political, economic and social development. In little more than half a century, through wars and cessions, Bolivia lost half of its national territory to its five neighbors. Since the colonial period, the export of mineral wealth has, on the one hand, contributed to the country's growth and, on the other, created frictions with its world neighbors. The United States, particularly, has been accused of "economic imperialism" and interference in Bolivian internal affairs because of heavy American interests in the country's extractive industries.

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Bolivia has viewed the lack of an outlet to the sea, its chronic dispute with Chile, as its principal international problem. The War of the Pacific produced enduring bitterness against Chile (but see below). In the Treaty of 1904, ending that conflict, Bolivia ceded its Pacific Coast territory to Chile; in return, Chile granted Bolivia the duty-free use of the ports of Antofagasta and Arica, and agreed to build a railroad from Arica to La Paz. In 1962 Bolivia severed diplomatic relations with Chile in protest against the latter's plan to divert water from the Rio Lauca; Bolivia withdrew from the Organization of American States (OAS) in protest against the inaction of the body toward that issue and did not resume its seat until 1965. While behind-the-scenes efforts to normalize the situation began in 1966, Bolivia has not yet restored full diplomatic relations with Chile.

When Bolivia nationalized the Gulf Oil properties, it embarked on a policy which has changed the nation's image on the world scene. This action affected not only Bolivia's relations with the United States, but with its sister Latin republics and the Soviet Union, as well. Towards the United States, the Bolivian Government has taken an officially pugnacious attitude. It appears willing to jeopardize the economic and military assistance which has helped sustain the nation. Towards the Soviet Union, on the other hand, the Ovando regime has made a conciliatory gesture by deciding to exchange ambassadors. (Bolivia established diplomatic relations with the USSR in 1945 but never had exchanged missions.) Some observers imply this is indicative of a Bolivian intent to seek Soviet trade and assistance if relations with the United States continue to deteriorate. The pattern of Bolivian-Soviet relations, however, would suggest this to be an unlikely possibility. (In 1966 President Barrientos declared that, although his government would not establish diplomatic relations with Communist nations, it was ready to accept their aid, provided it was granted on terms which were acceptable to Bolivia and not conditioned on political concessions.)

Bolivia's relations with other Soviet-oriented nations have been intermittent and spotty. Hungary has maintained a legation while the Yugoslavs have an embassy in La Paz. Czechoslovakia had exported films and other cultural media to Bolivia until the two nations broke relations in 1964. Bolivian economic relations with Communist nations have been insignificant, but a number of Bolivians have studied in those countries.

Cuba, of course, is a special case. The 1967 Cuban intervention in Bolivian internal affairs punctuated an undefined relationship between the two countries. Bolivian leftist groups initially had looked with favor upon Castro's rise to

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power. When Cuba became firmly associated with the Soviet Union, however, it had a disrupting effect on Cuban-Bolivian relations, and on the attitude of those groups. Bolivia reluctantly supported the Punta del Este resolution of January 1962 which condemned Communism as incompatible with the inter-American system, supported the Alliance for Progress, and excluded Cuba from the Inter-American Defense Board. In August 1964 Bolivia broke diplomatic relations with Cuba under strong United States and OAS pressure. The future course of relations between Bolivia and Cuba is not clear, but in October 1969 General Ovando declared that Bolivia would accept Cuba back into the OAS. He explained that Bolivia stands for self-determination and that the demonstrated approval of Castro by the Cuban people is sufficient reason for Cuba's re-admission. He did not specify that Bolivia would re-establish diplomatic relations with Cuba, but expressed the hope that Cuban interference in Bolivian internal affairs would cease.

Toward its other hemispheric neighbors, Bolivia generally has maintained good relations and, in the wake of the Gulf incident, Bolivia has come to symbolize Latin resistance to American power. Bolivia's attitude has even softened toward Chile as a result of that country's rejection of Gulf's move to embargo shipment of pipeline construction materials to Bolivia. Relations between Bolivia and Argentina, which have grown close both economically and politically, have been strengthened further by Argentina's offer of assistance in the pipeline matter. General Ovando has reversed his past record of conservatism to declare his administration the "ideological brother" of the Peruvian military regime which took earlier nationalization action against the International Petroleum Company. While minor problems have arisen over the ill-defined borders between Bolivia and Brazil, relations between these two countries have been relatively satisfactory. Bolivian nationalism represents a radicalization of the political militarism that began five years ago in Brazil. Despite the Chaco War of the 1930's, Bolivia's relations with Paraguay have been generally amicable since World War II.

In a broader hemispheric sense, Bolivia has joined with Chile, Colombia, Ecuador and Peru in establishing (May 1969) the Andean Group, a subregional group within the Latin American Free Trade Association (LAFTA). The Andean Group grew out of a 1966 meeting which, remarkably, saw members overcome some of their traditional enmity toward each other. They were able to develop an action program which sought, among other objectives, to promote freer trade, harmonize economic and social policies, mobilize resources to finance investment, and intensify the process of subregional industrialization.

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PART II

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Bolivia, a land of amazing contrasts, spreads over an area larger than Texas, Oklahoma, and Kansas combined. The terrain is dominated by the impressive Andean mountains that tower miles above the remainder of the country. Sharply contrasting forested plains and savannas form the remainder of the country. Bolivia's climate is just as diverse as its terrain -- ranging from the bitterly cold, windy and dry highlands through transitional zones in the mountain valleys to the hot and humid lowlands. Dense rain forests, swamps, marshes, and dry thorn forests provide a varied covering for the Lowlands while only a sparse growth of vegetation giving way to barren salt-flats, rocky slopes, and snow-covered peaks are found in the mountains.



Bolivia's relatively small population, an estimated 3,748,000 people, are mostly of Indian ancestry, primarily Quechua and Aymara. Even though a majority of the population is officially classed as Indian, Bolivia is run by a small group who claim a Spanish or European heritage. Many of these so-called whites (blancos) trace their ancestry back to the conquistadors, but because of considerable interbreeding in the colonial era, few can truthfully deny some Indian ancestry. Nevertheless, Bolivians recognize three classes of people. At the top of the ladder are the whites, next come the cholos (those of Indian or mixed ancestry who have adopted Western ways), and last the Indians who retain their traditional way of life.

Bolivia's inhospitable terrain and climate has had considerable influence on settlement patterns. While there are only enough people to make up a country-wide average of nine persons per square mile, population densities in a few areas of the northern Altiplano and the east-facing valleys of the

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Cordillera Real exceed 100 per square mile. Vast areas of the southern Altiplano and the Eastern Lowlands are almost entirely uninhabited. In recent years, migrations from the highlands into the major cities and to government-sponsored colonies have somewhat altered the previous (1950) country-city population ratio of 65 percent rural and 35 percent urban.

Health and sanitation conditions are among the worst in the Western Hemisphere, the ignorance of the majority of the population as to the elemental rules of hygiene being compounded by the country's physical environment. To further aggravate this problem, housing and education must be categorized as sub-standard in terms of Western values. The majority of dwellings are small, overcrowded, and without the most basic essentials. Despite government efforts to improve education, the illiteracy rate remains near 70 percent.

Roman Catholicism is the professed faith of 90 percent of Bolivia's people. The practice of this religion, however, varies markedly among the social and ethnic classes from orthodox Catholicism to various admixtures of traditional beliefs to, finally, the Indians who never have been completely converted. Minority religious groups include relatively small numbers of Protestants, Jews, assorted eastern faiths, and animists.

Both communication and transportation are extremely difficult; as a result, many areas have little, if any, contact with the outside world, and a journey of even a few miles can become a major undertaking. Bolivia's telecommunications facilities and services are poor by any standards. Many areas have no telecommunications service and the existing networks are often overloaded. With the exception of a wireline network on the southwestern plateau, Bolivia is dependent upon high frequency radio for long-distance communication. Both private and government radiobroadcasting systems do exist, but most transmitters have only a small reception radius.

Bolivia's transportation network is rudimentary. Most roads and railroads are concentrated on the Altiplano and the adjoining mountains and valleys. Of these, only 3,600 miles out of an estimated 9,000 to 16,500 miles of road are passable throughout the year, and the 2,300 miles of railroad are in poor condition and inefficiently operated. As a result, even where roads or railroads exist, travel is at best uncertain and at worst hazardous. In the vast areas of the Eastern

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Lowlands, the only transportation is via unimproved waterways or by air. While the air fleet is small and generally old, the airlines serve a relatively extensive network of airfields and provide the most important and often the only link between isolated settlements and the principal urban centers.

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## I. The Land

### A. Focus

Bolivia, Che Guevara's choice for a guerrilla base in South America, is a landlocked republic bounded by five other countries. It occupies some 424,000 square miles of territory, with maximum dimensions of about 900 miles from north to south and 800 miles from east to west. In spite of its completely tropical location, the country experiences a wide diversity of climatic conditions because of the great altitudinal differences within and between its two major regions (see Map 58810).

The western two-fifths of Bolivia, the Andean Highlands Region, towers miles above the rest of the country and is cold, windy, and very dry. Although bleak and inhospitable, the highlands include the most densely settled sections of the country. Major urban centers -- La Paz, Cochabamba, Oruro, and others -- are located in valleys and basins at elevations well over 10,000 feet. Except for a zone of dense forest along its eastern flank, most of this area supports only a very sparse growth of natural vegetation; broad salt flats, snow-covered summits, and rocky mountain slopes within the highlands are almost barren.

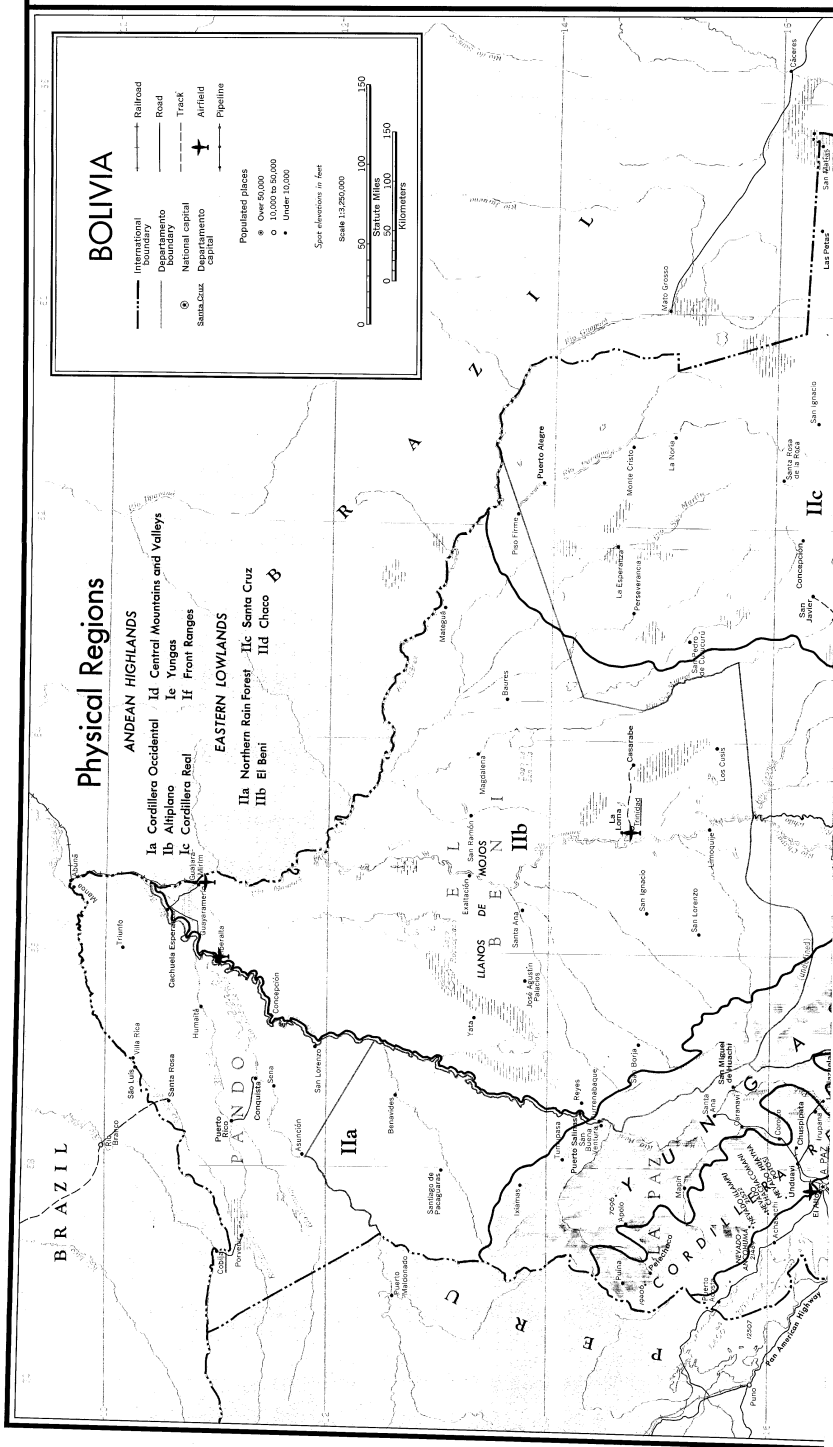
In contrast, the forested plains and savannas that stretch to the Amazon and Paraguay river basins and comprise the vast Eastern Lowlands Region are hot and humid. They are covered by dense rain forest, extensive swamps and marshes, seasonally inundated grasslands, and, in the south, dry thorn forest. Most sections of the lowlands remain largely uninhabited except for scattered villages and towns along the larger rivers.

Within each of the terrain regions environmental conditions vary greatly, especially along the eastern side of the highlands. Mountain slopes and valleys in this transitional zone may be lush tropical jungles or cactus-covered deserts, depending on their exposure to or protection from the moisture-bearing northeasterly winds that sweep in from the plains. The sparsely settled foothills most nearly approximate the environmental conditions of the Sierra Maestra of Cuba and were the center of Cuban-supported guerrilla activity in Bolivia.

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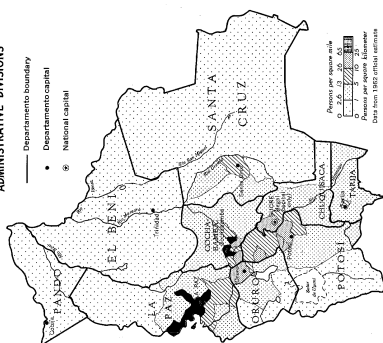
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## POPULATION AND ADMINISTRATIVE DIVISIONS

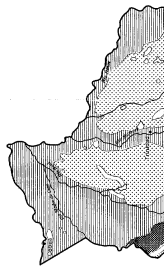
- Departmental boundary
- Departmental capital
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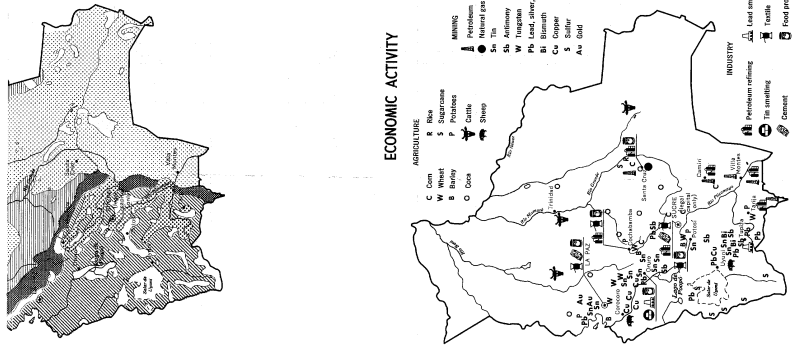
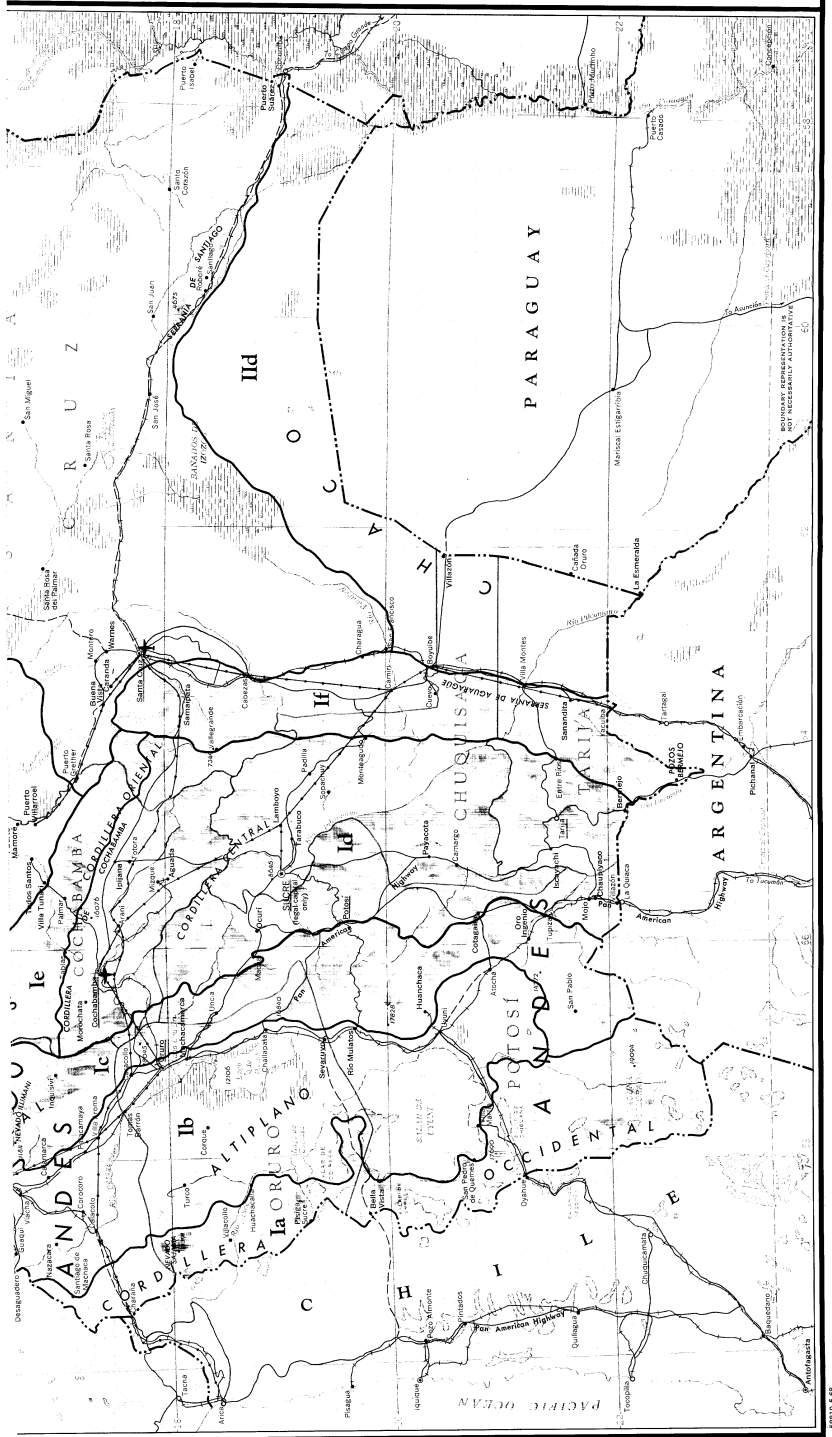


Persons per square mile  
 0 10 20 30 40 50  
 Persons per square kilometer  
 0 10 20 30 40 50  
 Data from 1982 official estimate

## VEGETATION

- High altitude tundra grass and cultivated lands
- Mountain forest
- Tropical rain forest
- Neotropical forest and shrubs
- Open grassland, savanna woodland, palm, and mesquite forest
- Open scrub woodland and grassland
- Marsh
- Salt flats
- High barren or snow covered mountains





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B. Andean Highlands

The Andean Highlands Region of Bolivia includes most of the forested highland areas

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This region constitutes the broadest section of the great Andean chain of lofty mountains that extends along the Pacific coast of South America. Within the region, snowcapped peaks rise to elevations of over 20,000 feet and the general surface elevation is greater than 14,000 feet. Moving from west to east across the highlands, one encounters first the volcanic Cordillera Occidental straddling the border with Chile, then a gradual slope down to the high plains that are collectively known as the Altiplano, next a sharp rise to the extremely high Cordillera Real, and finally a descent through forested gorges and ridges, known as the Yungas in the north and as the Front Ranges in the south, to the Eastern Lowlands (see Figure 1).

The difficulty of moving over the varied terrain of the Andean Highlands depends largely on the direction of movement,

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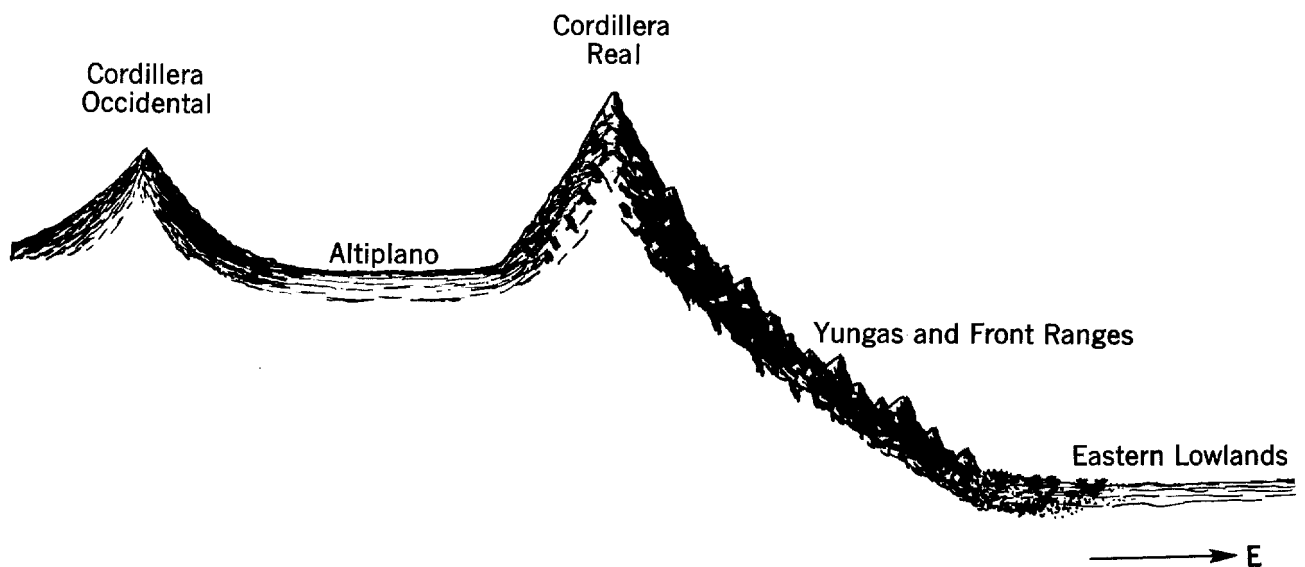


Figure 1. Generalized profile of Bolivia.

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the section to be traversed, and the season. In general, it is easier to follow the northeast-southeast "grain" of the country, and most of the main roads and rail lines follow this trend. Movement across the grain may involve the use of high mountain passes or the crossing of numerous streams.

The best period for movement in most of the Andean Highlands is the dry season, from about June through August; at this time the ground is usually firm and streams are fordable. During the remainder of the year, especially in the rainiest period, December through February, flash floods often interrupt traffic, and many of the small mountain streams become unfordable torrents. Miry ground under the crust of the salt flats is at its worst from January through May.



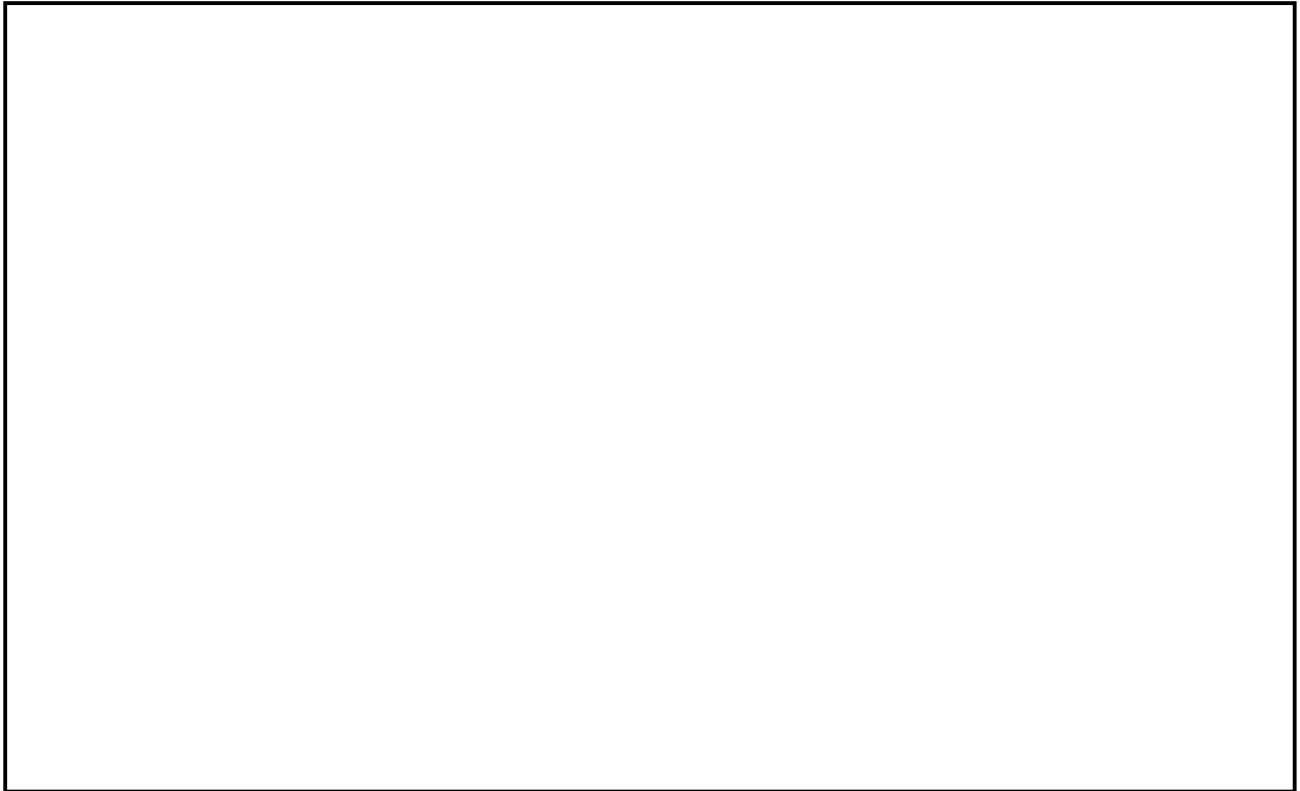
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1. Cordillera Occidental



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The Cordillera extends along the entire border with Chile and forms most of the western margin of the Altiplano (see Figure 2). This subregion, occupying the southwestern extremity of the department of La Paz and the western parts of Oruro and Potosí Departments, consists of a chain of volcanic mountains with intervening basins containing salt flats and shallow saline lakes. It is an area of hot springs, geysers, lava flows, grotesque wind-eroded rocks, and steep-walled canyons.

The Cordillera is traversed by very few improved roads but is crisscrossed by pack trails and in few places presents an insurmountable barrier to movement. Most of the large volcanic peaks of the range are fairly widely spaced, and the intervening areas generally flat to rolling. The small salt flats and lagoons can be crossed or circumvented; the broken lava slabs and boulder fields and occasional deep canyons impede movement only locally.

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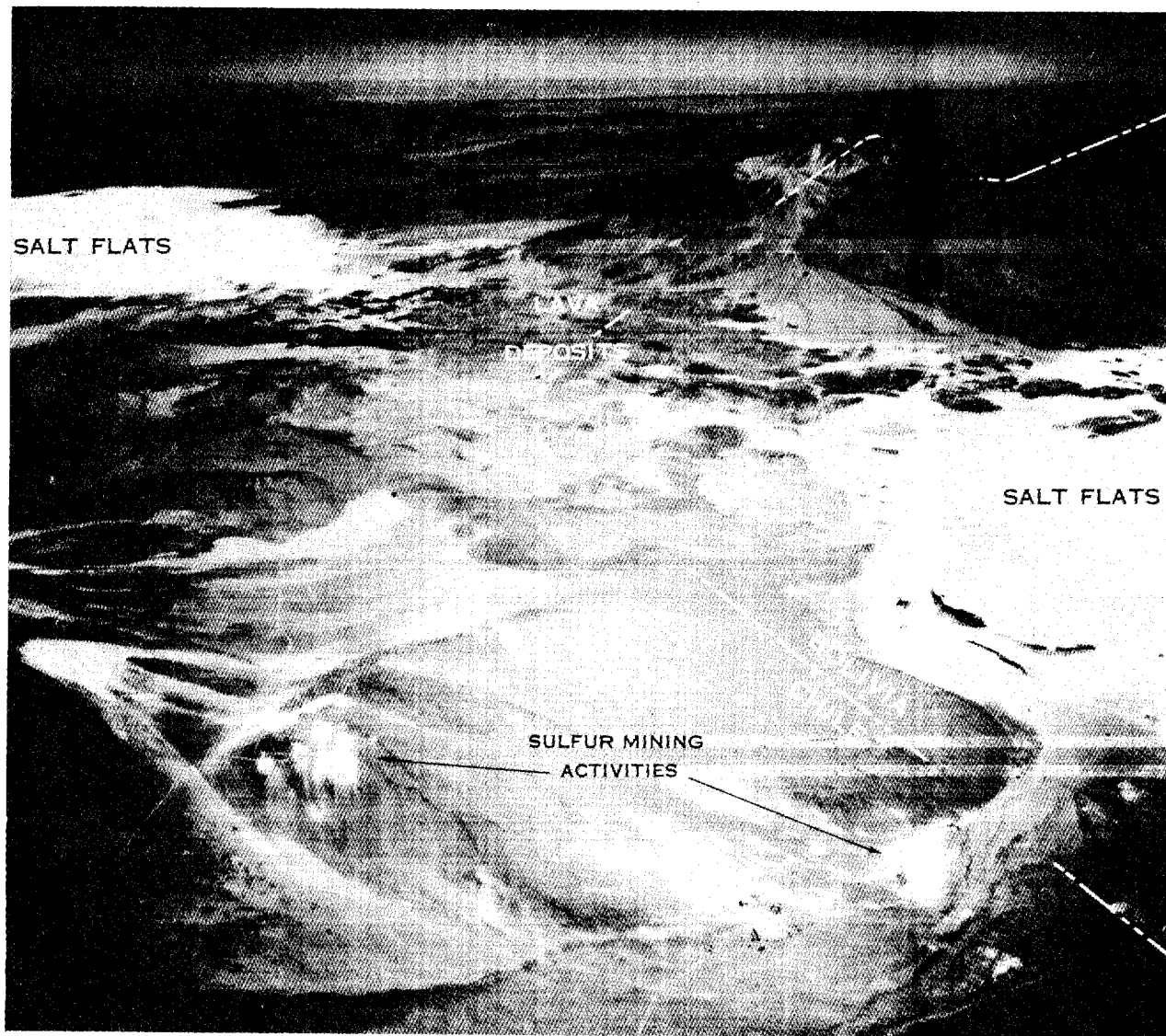


Figure 2. Cordillera Occidental. The large salt flat to the right is the Salar de Empexa.

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a. Terrain and Climate

The Cordillera Occidental trends in a north-south direction and is divided into three main sections. The northern section is known as the Cordillera de Pacajes y Carangas, the central as the Serranías de Sillillica, and the southern as the Cadena Volcánica. Many peaks throughout the chain rise to elevations over 18,000 feet. The highest mountain, snow-capped Sajama with its huge volcanic cone rising to an elevation of 21,391 feet, dominates the northern part of the chain.

The central section of the cordillera, the Serranías de Sillillica, is bordered to the east on the Altiplano by two enormous salt flats -- the Salar de Coipasa and the Salar de Uyuni. From the highest peak in this part of the chain, 19,669 feet, a spur of mountainous terrain juts eastward between the salt flats.

The southernmost part of the Cordillera Occidental, the so-called Cadena Volcánica, is not a distinct mountain range but a series of high volcanoes aligned in various directions and connected with numerous secondary hills and ridges. Several of these volcanoes also reach elevations over 19,000 feet. No volcanoes, here or elsewhere in the chain, are active, although some emit sulfurous gasses and steam.

A number of small salt lakes occupy enclosed basins within the mountains, especially in the south. Most of these basins have reached the stage where the area surfaced with salts is greater than that of open water. Many basins are merely large marshy areas, topped by muddy salt, sometimes soggy, sometimes with a dry crust, and with here and there a shallow lagoon. Usually the open water is only a few inches deep, and even the larger lakes are seldom more than 3 or 4 feet in depth. The salt crystals may form tough solid bottoms or, when mixed with windblown sand and clay particles, veritable quicksands. The largest lake in the subregion is Laguna Colorada (see Figure 3), in the southern part of the Cadena Volcánica, and the largest salt flat is the Salar de Empexa, due west of the huge Salar de Uyuni on the Altiplano.

There are few large streams in the high, arid Cordillera Occidental Subregion. The Río Mauri, flowing out of Peru, crosses the northern part of the subregion and joins the Río Desaguadero on the Altiplano. A number of smaller, intermittent streams tributary to the Mauri flow in from Chile. Farther to the south, the Río Lauca flows from a relatively broad highland basin in Chile through a pass in the cordillera and into Lago de Coipasa on the Altiplano (see Figure 4);



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Figure 3. Laguna Colorada at 12,500 feet in Cadena Volcánica. Note the flamingos in flight above the lake.

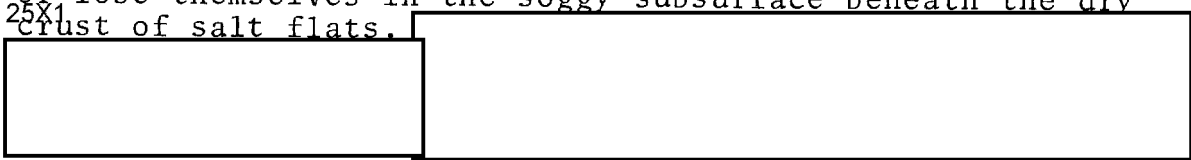
Figure 4. Río Lauca flowing out of Chile into Bolivia in background. The arid rock-strewn slopes support little vegetation.



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Chilean plans for diverting its waters for irrigation purposes have been the subject of bitter protests by Bolivia. Elsewhere in the cordillera, intermittent streams feed small lakes or lose themselves in the soggy subsurface beneath the dry crust of salt flats.



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A number of high passes, all over 13,000 feet, cross the cordillera. The most important are the Tacora Pass in the north, through which the rail line extends from Arica, Chile to La Paz; and the Ollagüe Pass between the Serranías de Sillillica and the Cadena Volcánica, the route of the rail line from Antofagasta, Chile to La Paz. The other passes are utilized by pack trails.

High, bleak, and desolate, the cordillera is subject to fierce winds and severe cold. Because of the general aridity, the snowline is unusually high, and only the loftiest peaks, such as that of Mount Sajama, are perpetually snow covered. Even on the higher mountains, most of the snow disappears in the superdry atmosphere. Rainfall is scarce, especially on the western slopes, and the only streams in the cordillera are formed from the snowmelt of higher peaks. The eastern flanks of the mountains receive slightly greater rainfall because of the more humid easterly winds. The moister slopes of the northern part of the range receive up to 20 inches of precipitation, while the more arid southern sections receive less than 10 inches. Because of the great altitude of the cordillera, the air is generally cold and rarified. Charana, at slightly over 13,000 feet in the main pass through the northern part of the range, experiences mean maximum temperatures of only 67°F during November, the warmest summer month, and a mean minimum of 10°F in July, the coldest winter month. The greater part of the subregion, situated at considerably higher altitudes than Charana, experiences correspondingly lower temperatures. Nighttime temperatures in many places often drop well below 0°F. Newcomers to the area are likely to suffer from the mountain sickness called soroche or puna, which results from a deficiency of oxygen at high altitudes.

b. Vegetation and Land Use



Most of the landscape is desolate with only a few patches of yellow ichu grass sprouting here and there and an occasional thola bush growing from a rocky crevice.

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A curious, very resinous, mosslike plant known as the llareta is also found in the subregion; because of its moundlike form, it looks more like a boulder than a plant. Bunch grass and widely scattered bushes cover the lower slopes of the mountains, the margins of some small lakes, and the valley bottoms of some intermittent streams where at least a minimum of moisture is available. Elsewhere, especially in the arid south and on the higher slopes of the rocky mountains and volcanoes, the terrain is practically devoid of vegetation.

Flocks of llamas and alpacas are grazed where the ichu grass is most abundant. Thola bushes and llareta plants are chopped for firewood; the latter is especially prized wherever little other fuel is available. Organized exploitation has so diminished the supply of this fuel plant that it may soon be completely destroyed. Chilean clandestine encroachment into Bolivian territory, chopping and hauling out llareta, has occasionally given rise to frontier incidents.

The cordillera is very sparsely settled, particularly in the south, and cultivated plots are found only in isolated, widely spaced oases and in some of the deep canyon bottoms protected from the strong winds. Small mines are scattered along the Chilean border where sulfur deposits occur in irregular patches on the sides of volcanoes and in the sites of old craters. Local sulfur refineries (which use llareta as fuel for their retorts) truck most of their product to Chile.

25X1

## 2. The Altiplano

The Altiplano Subregion is located in the departments of La Paz, Oruro, and Potosí and consists of a series of broad basins flanked by high mountains.

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The Altiplano is actually part of an enormous trough that extends northward through Peru, Ecuador, and Colombia. Bordered to the east and west by the giant Andean Cordilleras, the Altiplano is only slightly less desolate and forbidding than the surrounding mountains (see Figures 5 and 6). Although it comprises mostly vast, flat, windswept plains, it also contains extensive areas of rugged, deeply dissected terrain, and nearly

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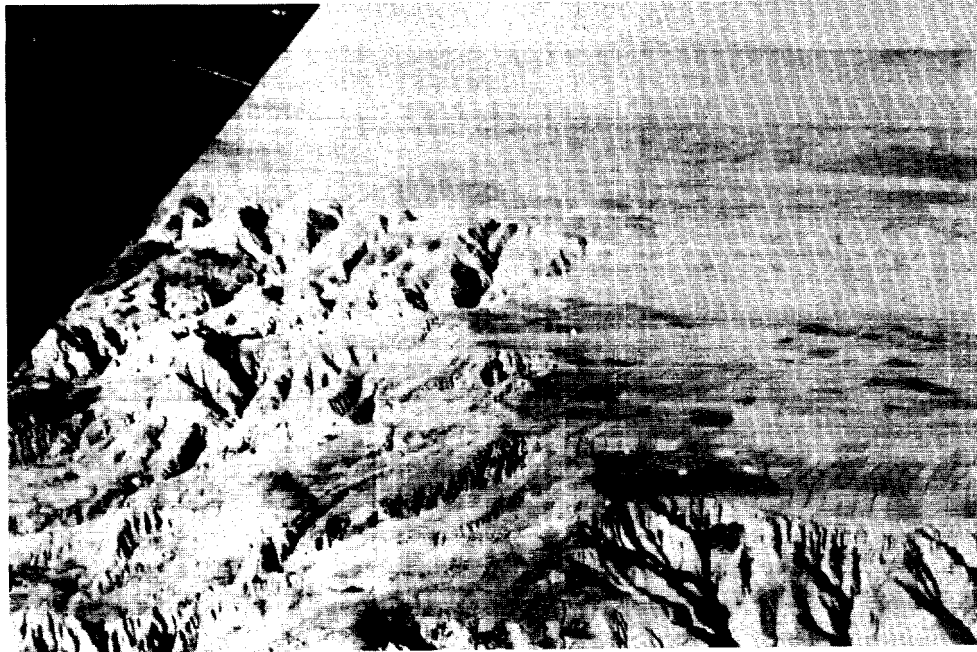


Figure 5. Altiplano near La Paz. The level surface of the Altiplano ends abruptly at the edge of the deep valley, which is the site of the capital.



Figure 6. Altiplano south of Salar de Uyuni. Low bushes are scattered across the plain; steep bluffs rise in background.

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a quarter of the total surface is covered by marsh-bordered lakes and salt flats.

Movement on the Altiplano is generally unrestricted throughout the extensive flat, unbroken sections but may be hindered by scattered hills or more seriously impeded by highly dissected terrain in other sections. The marshy ground along much of the Río Desaguadero and around Lago de Poopó and some of the other smaller Altiplano lakes is a serious obstacle to all types of surface movement. Across many parts of the large salt flats -- the Salar de Uyuni and the Salar de Coipasa -- movement is possible even by trucks, but it is hazardous because of weak spots in the surface, especially around the margins; vehicles have been known to break through and sink out of sight.

a. Terrain and Climate

Most of the Altiplano is situated at elevations ranging from 12,000 to 14,000 feet. It slopes gently from north to south with the higher northern part characterized by rolling relief, the central by broad plains and lakes, and the lower southern by huge salt flats. Spurs from the volcanic Cordillera Occidental jut eastward into the subregion, but a corridor of low ground along its eastern margin connects the major basins. The principal features of the larger basins are, from north to south, Lago Titicaca, Lago de Poopó, Lago de Coipasa, Salar de Coipasa, and Salar de Uyuni.

Lago Titicaca is a deep, fresh-water lake, half in Bolivia and half in Peru (see Figure 7). It is about 135 miles long by 70 miles wide and is situated some 12,500 feet above sea level. Small islets dot its surface, and the irregular shoreline is characterized by a succession of peninsulas and embayments. The largest embayment is connected by only a very narrow strait to the main body of the lake. Hills rise steeply around most of the lake except at its northwestern and southeastern ends where there are rich agricultural plains. The shallow, marsh-fringed Río Desaguadero drains the lake to the south. The river is subject to frequent flooding and often abandons its channel. After a course of almost 250 miles its waters finally empty into Lago de Poopó, a highly saline lake less than half the size of Lago Titicaca. Poopó's only outlet is a small stream that flows southward for a few miles and then disappears into the arid ground. Southwest of Lago de Poopó lies the small Lago de Coipasa, a remnant of a much larger lake now occupied by the Salar de Coipasa. Still farther to the south is the huge Salar de Uyuni, an enormous salt flat some 90 to 100 miles long and about 80 miles wide;

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Figure 7. Southern part of Lago Titicaca. A buildup of cumulus clouds is typical over the Altiplano during the summer wet season.

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it is separated from the Salar de Coipasa by a long spur of high ground extending eastward from the Cordillera Occidental. Surface conditions of the salt flats are constantly changing, not only from wet to dry season but within shorter periods as well. Water or very moist soil is found only a few inches below the hard crust of salt in many places, and the margins of the salt flats are particularly treacherous. Near the center of the Salar de Uyuni, however, the salt reaches a thickness of 50 feet.

The climate of the subregion is generally cold, dry, and windy. The northernmost section, around Lago Titicaca, enjoys somewhat less rigorous conditions because of the ameliorating influence of the lake waters. The mean annual temperature in this section is about 50°F, and the mean annual precipitation is about 25 inches, most of which falls from October through March. Farther to the south, in the central part of the Altiplano, the climate is markedly colder and drier. The mean annual temperature is about 40°F to 45°F, and the mean annual precipitation is from 10 to 15 inches. Rains may be intense in the central area from January to March, but evaporation rates are high during most of the year. The southern part of the Altiplano is very cold and dry. The mean annual temperature is less than 40°F, and the total annual rainfall is only about 4 inches; during some years, no appreciable rainfall is recorded.

b. Vegetation and Land Use

The natural vegetation of the Altiplano is very sparse. Bunch grass, thola bushes, and llareta plants are the typical natural cover in most of the subregion. In the south the sterile salt flats support no vegetation except a fringe of reeds around their margins. Reed marshes are also found on the shores of Lago Titicaca, along the Río Desaguadero, and around some of the smaller lakes of the central part of the Altiplano.

The potato is the most important crop of the Altiplano and is widely grown in protected sites at lower elevations; barley and a number of other hardy cereals are cultivated at somewhat higher elevations. Vegetables, beans, wheat, and alfalfa thrive in the immediate vicinity of Lago Titicaca. The best agricultural lands are located on level terrain at the southeastern end of the lake (see Figure 8), but small cultivated fields are found all around its shores. On the steep hillsides intricate agricultural terraces help prevent erosion and can facilitate cross-country movement (see Figure 9). In the northern part of the Altiplano large herds of

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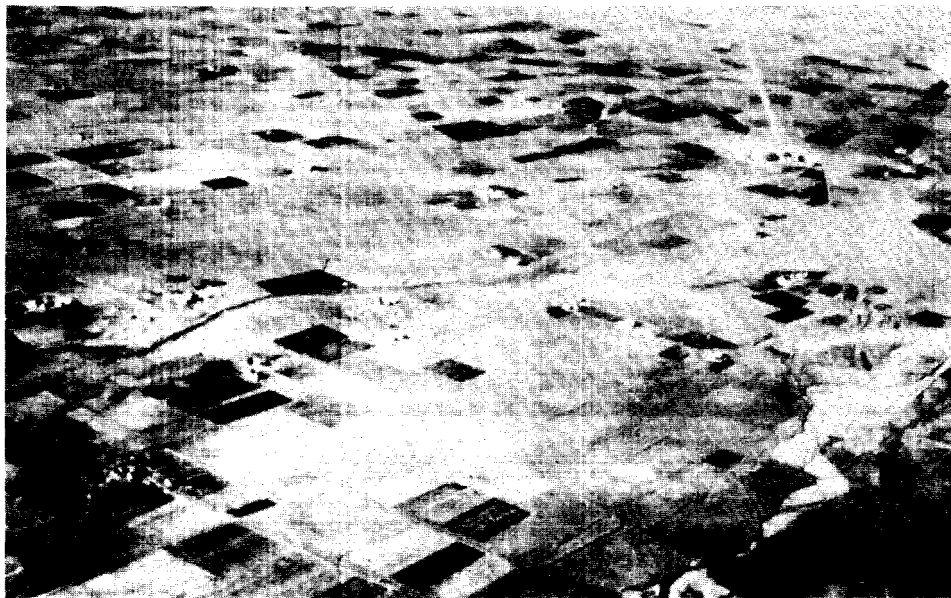


Figure 8. Cultivated fields on level land south-east of Lago Titicaca.



Figure 9. Small farms and terracing on slopes facing Lago Titicaca. A band of marsh fringes this section of the Lake.

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llamas and alpacas and sizable flocks of sheep are grazed, but in the arid southern sections both crop cultivation and livestock grazing are much more limited. Fish are taken from Lago Titicaca (see Figure 10) and Lago de Poopo. Mineral deposits are exploited in a number of places; the most important is the great copper deposit at Corocoro, about 50 miles southwest of La Paz. High-grade salt is chopped from the huge salt flats in the south (see Figure 11).

### 3. Cordillera Real

The Cordillera Real, a lofty chain of mountains bordering the eastern side of the Altiplano, is a cold, barren area

Its great heights and steep slopes, particularly in the north, channel movement to relatively few passes, and even these are often choked with snow or blocked by landslides.

The most important tin mines in the cordillera have been the scene of numerous violent clashes between Government troops and miners -- the latter are prime targets for Communist agitation.

The Cordillera Real includes the highest peaks in Bolivia, and serrated crestlines over 19,000 feet are common throughout the range. Steep, rocky, and lashed by frigid gales, the cordillera stands as an imposing barrier between the Altiplano and the lowlands. Snow and ice cover extensive areas of the upper slopes, and many of the snowfields are laced by treacherous crevasses (see Figures 12 and 13). The higher peaks are jagged and often shrouded in clouds. The lower slopes are blanketed by immense deposits of gravel and sand.

#### a. Terrain and Climate

The subregion is divided into five main sectors. The most northerly extends from the Peruvian frontier to the gorge of the Río de la Paz southeast of the capital; it averages about 18,000 feet in altitude for over 100 miles and includes the highest mountains in the country. Illampu\* (21,489 feet), the loftiest peak in Bolivia; Chachacomani (20,528 feet); Huayna Potosí (20,407 feet); and Illimani

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\*Nevado Illampu has two main peaks, the highest of which is known as the Ancohuma peak (shown on Map 58810).

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Figure 10. Indians fishing from totora reed boats on Lago Titicaca.



Figure 11. Chopping salt from Salar de Uyuni on southern Altiplano.

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Figure 12. Climbers on snow-covered summit on Cordillera Real near Peruvian border.

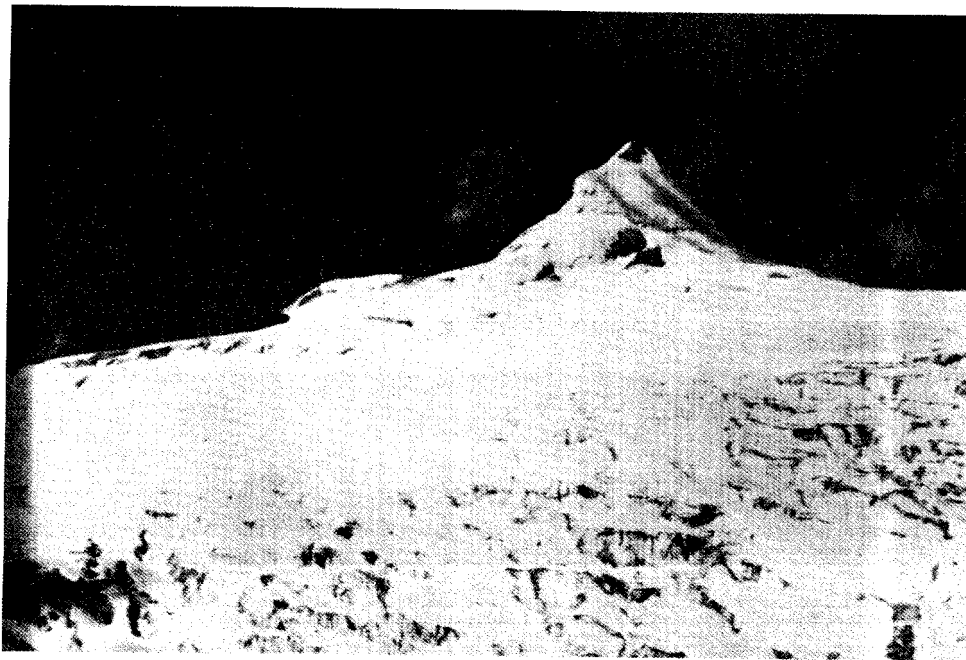


Figure 13. Glacier with crevasses in northern part of Cordillera Real. An immense cornice of ice and snow caps the high peak in background.

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(21,184 feet), overlooking La Paz (see Figures 14 through 16). These mountains are snowcapped the year around. The best of a number of difficult routes across this part of the cordillera goes northeastward from La Paz to Santa Ana, which is on the Río Beni in the Yungas; the high point on the route is slightly over 15,000 feet.

The second sector extends from the Río de la Paz gorge southeastward to the vicinity of Oruro, where a road and a rail line cut across the range to Cochabamba (see Figure 17). The rail line is the northernmost of three that branch off the main railroad running southward on the Altiplano from La Paz to Argentina. The highest peak in this sector reaches 19,258 feet.

The third sector, from Oruro to El Paso del Cóndor, includes some of the lowest parts of the range; the mountains adjacent to Lago de Poopó are mostly under 15,000 or 16,000 feet (the lake itself is at an elevation of slightly over 12,000 feet). Farther to the south, however, in the Cordillera de los Frailes, peaks again rise to elevations over 19,000 feet. In the northern part of the sector, a rail line from Machacamarca extends southeastward to Uncia; the highest point on the line, where it crosses to the eastern side of the range not far from Uncia, is at about 14,000 feet. A highway parallels the rail line and continues southeastward from Uncia to Sucre. The Pan-American Highway follows another route across the range farther to the south; it goes from Challapata to Potosí. Near the southern end of the sector is El Paso del Cóndor one of the world's highest passes (15,715 feet) utilized by a railroad. The line extends from Río Mulatos to Potosi and on to Sucre.

The fourth sector includes the Cordillera de Chichas, which also has mountains rising to elevations over 19,000 feet.

Finally, the fifth sector, which includes the Cordillera de Lípez, curves westward in two parallel arms that enclose the southern end of the Altiplano with mountain peaks reaching elevations over 20,000 feet.

Most of the streams originating in the high mountains of the cordillera flow eastward to the lowlands. Except for a few providing snowmelt to Lago Titicaca, no sizable rivers flow westward to the Altiplano. In the north the important streams are headwater tributaries of the Río Beni. Most notable is the Río de La Paz, which originates near the city of La Paz and passes through the cordillera in a spectacular

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Figure 14. Nevado Illampu, highest mountain in Bolivia, as seen from village of Sorata near its base.

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Figure 15. Nevado Huayna Potosí. The animals grazing on the rocky slopes are llamas.



Figure 16. Nevado Illimani over-looking La Paz.

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gorge. This great gap is about 12 miles wide and over 2 miles deep, but the river itself rushes through a narrow channel bordered by almost vertical cliffs. Most of the streams draining the drier central and southern parts of the range are headwater tributaries of the Rio Grande and Rio Pilcomayo; with little or no snowmelt to draw on during the dry season, the majority are intermittent.

The cordillera experiences very cold weather, and the higher sections have a polar climate the year around. Because temperatures are below freezing throughout the year at altitudes above about 16,000 or 17,000 feet, practically all of the precipitation occurs as snow. Permanent snowfields blanket the higher slopes of the northern mountains, while in the south, where precipitation is considerably less, only scattered high peaks are snow covered. While showers and thunderstorms occur, most of the rain falls at lower elevations in the subregions to the east. Strong local winds and violent squalls known as juntas often roar through the valleys and mountain passes, sometimes bringing transportation over the high passes to a standstill. Clouds and mists frequently envelop the lofty mountain peaks, creating hazardous flying conditions. Maximum cloudiness occurs during the summer half year (mid-October to mid-April), which is also the season of maximum precipitation, thunderstorm activity, and air turbulence.

b. Vegetation and Land Use

The cordillera supports only a scattering of yellowish turf and an occasional bush or small tree at lower elevations. The high, rocky slopes are mostly barren or covered with snow. Only in some of the deeper gorges, such as that of the Río de la Paz, are there patches of relatively dense vegetation. Sheep, llamas, and alpacas are grazed at lower elevations near some of the small villages scattered through the bleak mountains.

Tin is found in the northern and central sections of the range, and antimony, lead, and zinc are found in the south (see Figure 17). Small mining camps are situated in nearly inaccessible valleys and perched precariously on steep slopes at elevations between 15,000 and 17,000 feet; higher up there are no permanent settlements. The larger mines are located at elevations below 15,000 feet. The most important tin-producing area in the country is the Catavi-Siglo Veinte mining complex about 4 miles north of Uncia (see Figure 18). The snow-covered mountainsides near La Paz are among the world's highest ski slopes (see Figure 19).

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Figure 17. High barren slopes of Cordillera Real in tin-mining district west of Inquisivi. Note the truck on the road.

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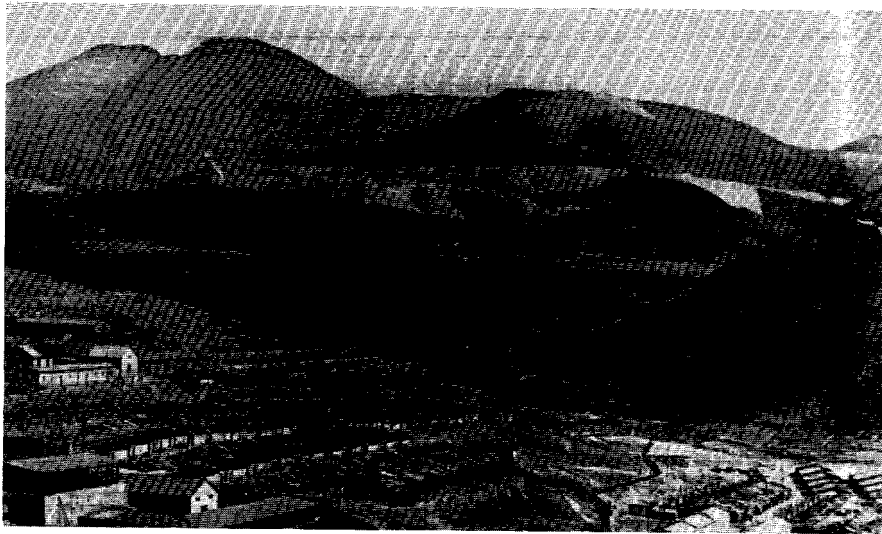


Figure 18. Part of Catavi-Siglo Veinte mining complex near Uncia.

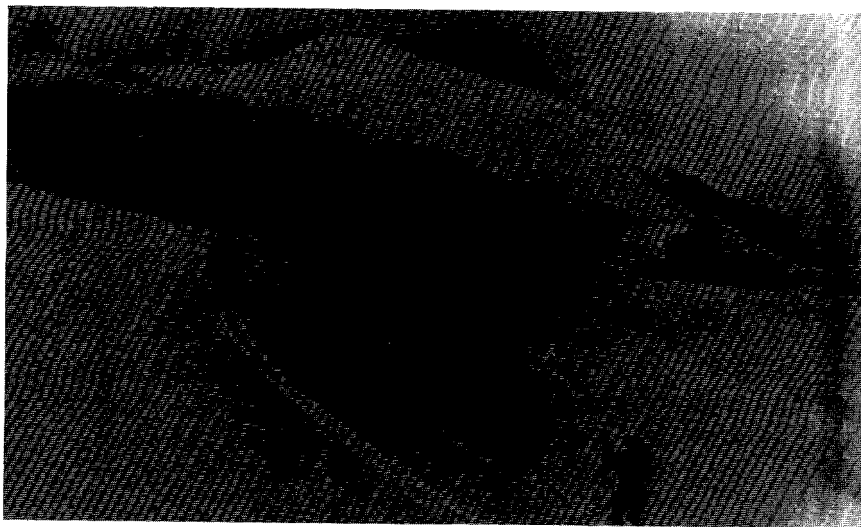


Figure 19. Skiers on slopes north of La Paz. A ski lift nearby reaches an elevation of 18,300 feet.

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#### 4. Central Mountains and Valleys

The broad expanse of mountains and deep valleys of this subregion lie in the departments of Cochabamba, Potosí, Chuquisaca, and Tarija. Compared to the Cordillera Real there are few commanding mountains; elevations range from 15,000-foot mountain peaks in the west to valley bottoms at about 4,000 feet in the east. Much of the area is composed of high, flat to rolling plains called pampas. These are cut in many places by deep gorges and valleys of rivers flowing to the Eastern Lowlands. Most of the subregion is semiarid, and vegetation is scanty except in some of the valleys and on favored slopes at lower elevations. A number of fertile, irrigated basins scattered through the subregion support the densest concentrations of rural population in the country.

##### a. Terrain and Climate

Two principal river systems, the Río Grande in the north and the Río Pilcomayo in the south, have cut deep valleys southeastward across the high surface of the subregion. The drainage divide between the two systems lies in the vicinity of Sucre. Where the valleys pass through resistant rock they are very narrow, but elsewhere they widen out to form broad strips of flatland and, in some cases, relatively extensive valley basins.

The Cochabamba Basin in the northern part of the subregion is one of the most important agricultural areas in the country (see Figure 20). At an elevation of slightly over 8,000 feet, it is bounded to the north and west by rugged mountains that rise to 12,000- and 15,000-foot elevations. Streams draining the basin empty into the Río Caine, which in turn joins the Río Grande. The level basin floor is some 15 miles long by about 6 miles wide. Its margins are flanked by extensive fans of alluvial material eroded from the surrounding mountains. These alluvial surfaces and the valley floor itself are cut by

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numerous small streams that feed into the main river. Irrigation ditches running to cultivated fields also dissect the valley bottom

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The high, steep Cordillera de Cochabamba, north of the Cochabamba Basin, forms the divide between drainage flowing northward to the Río Chapare and to other streams of the Yungas Subregion and drainage flowing southward to the Río Grande. Small glacial lakes set in rocky basins within the mountains are fed by torrential streams pouring down from the snowmelt of higher peaks.

West of the Cochabamba Basin and continuing southward down the western side of the subregion, spurs of the Cordillera Real, 11,000 and 12,000 feet high, alternate with river valleys. Typically, the larger valleys are from a quarter to a half mile in width; their flat floors are covered by alluvium and are occupied by braided river channels. The valley sides in many places rise very steeply from the level floors. Most of the longer valleys are oriented in a northwest-southeast direction and are joined at right angles by steep-sided quebradas or canyons. Tongues of the flat terrain penetrate a short distance up the canyons from the broader valleys. Unfamiliarity with the terrain may easily lead one into these box canyons:

25X1

The intervalley areas consist of either narrow ridges or broader plateaulike surfaces.

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The Sucre Basin, somewhat smaller than the Cochabamba Basin, is situated in the valley of a tributary of the upper Río Pilcomayo at an elevation of about 9,000 feet. The basin itself is intensively cultivated, but most of the surrounding terrain, which rises gradually to elevations of 10,000 or 11,000 feet, consists of barren plains and high, rocky hills.

Continuing southward from Sucre, the country presents a broad panorama of gray and brown dome-shaped mountains. The gentle lines of the terrain are broken only where deep canyons have cut into the high surface; some of the more impressive gorges drop as much as 2,000 feet. To the south, aridity increases and most of the valley bottoms are dry and sandy. Dry, shallow lake basins filled with stones and boulders are common, and a few small, widely scattered salt lakes dot the high rolling country. The extreme south, which includes the fertile Tarija Basin, is a jumble of deep canyons and gorges set between arid mountain slopes.

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The whole eastern part of the subregion is generally lower than the west. It is characterized by distinct longitudinal ridges reaching elevations of 8,000 to 10,000 feet; these ridges are breached by the Río Grande, the Río Pilcomayo, and a few other sizable streams that flow to the Eastern Lowlands.

Sucre and some of the other highland basins enjoy springtime weather the year around, but the climate throughout most of the subregion is severe, with many hot days and freezing cold nights. During the winter, April through September, strong cold winds sweep across the exposed highlands. In the south, these winds raise funnel-shaped masses of dust which swirl over the arid plains; occasionally, a dozen or more whirlwinds are visible at once. At midday during the summer, the deep canyons in the eastern part of the subregion often become stiflingly hot. Precipitation decreases generally from north to south, with Cochabamba receiving slightly over 21 inches a year and Villazón, on the Argentine border, receiving only about 12 inches. During the dry season, from April through September or October, monthly mean precipitation for most of the subregion drops to an inch or less. For extended periods from October or November through March, streams that are generally mere trickles may swell to unfordable proportions.

b. Vegetation and Land Use

Most of the subregion is high and arid, supporting only a scattering of bunch grass and low bushes, but a few widely spaced valleys and basins have sufficient water for irrigation. Here and there small groves of gnarled trees cling to protected sites of boulder-strewn slopes. Toward the lower, eastern side of the subregion, natural vegetation becomes somewhat denser and grass-covered plateaus alternate with wooded valleys. There are also extensive areas of cactus in the more arid sections of the east. In some places thorny plants cover the ground as far as the eye can see; giant club-cactuses with fluted columns up to 75 feet high, immense clumps of prickly pear, and low trailing varieties form veritable forests of cactus (see Figure 21). The trailing cactuses are particularly dangerous; their sharp spines penetrate shoe leather and are hard to extract from the foot. Mules often get them in their noses while nibbling on leaves or on the scattered blades of coarse grass. Cactus forests are especially well developed in the area north of the Río Mizque, on the southern flank of the Cordillera Oriental, at elevations between 5,000 and 6,000 feet.

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Figure 20. Cultivated fields in Cochabamba Basin. A large airfield is visible in background.

Figure 21. Giant cactuses and thorny mesquite trees on southern flank of Cordillera de Cochabamba near Comarapa.

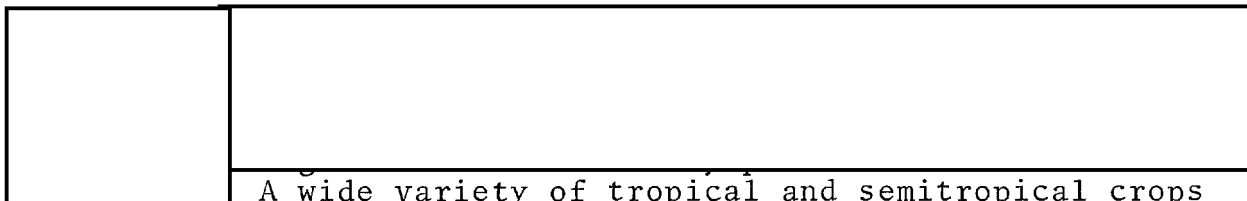


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The Cochabamba, Sucre, and Tarija Basins are the most notable of a number of relatively densely settled agricultural centers scattered through the subregion. Relying heavily on irrigation, these areas produce considerable amounts of vegetables and grain, especially wheat, barley, and corn. They also support numerous small vineyards and orchards. In addition to these relatively fertile valleys and basins, small settlements and individual farms are widely scattered throughout the highlands, often in what seem to be hopelessly unproductive locations (see Figure 22). In some sections with no streams, poor-quality water is obtained from deep wells. The Indian farmers, who are adept at conserving their scanty water supplies and at irrigating, grow fruit and cultivate small fields of grain, although the greater part of their subsistence is usually derived from flocks of sheep and goats. Harvested grain is piled in heaps and surrounded by fences of thorny brush to keep away the animals, and corn fodder is often stored in the tops of low trees. Small guardhouses in the centers of grainfields, sometimes built into the branches of stunted trees, are occupied by watchmen day and night as long as crops are in the fields.

#### 5. The Yungas\*



A wide variety of tropical and semitropical crops grows in the less steep valleys. In spite of its seemingly rich agricultural potential, the area as a whole is not densely populated. There are serious impediments to movement in the Yungas caused by the complex of valleys, mountain spurs, ridges, and hills; the deep rivers such as the Río Beni; and the almost impenetrable vegetation.

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\*In Bolivia, yungas (an Aymara word) refers to the warm, lush valleys of the eastern slopes of the Cordillera Real lying at elevations of about 3,000 to 8,000 feet, such as those of Nor Yungas and Sur Yungas Provinces of La Paz Department. The term as used in this report applies to the whole moist zone along the eastern slopes of the mountains and is an extension of the ceja de la montaña (eyebrow of the jungle) zone of Peru.

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Figure 22. Small village southeast of Sucre. The rocky ground provides stones for fencing fields.

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The Yungas is a transitional zone between the northeastern flank of the high Andean cordilleras and the vast plains of the Eastern Lowlands. It is an area of very uneven terrain, precipitous slopes and gorges, swift streams and waterfalls, and deep forested valleys. Nights are cool, rather than cold as they are at higher elevations, and days are less swelteringly hot than farther down in the lowlands. Rocky steep-walled canyons above the timberline and heavily forested valleys at lower elevations are major restrictions to movement through the subregion.

a. Terrain and Climate

The subregion is about 400 miles long in a northwest-southeast direction and tapers from a width of about 75 miles in the north to about 25 miles in the extreme south. Across this relatively narrow band, elevations drop sharply from approximately 13,000 feet in the west to 1,500 feet in the east. At the higher elevations, broad spurs of the Andes jut to the northeast between deep canyons; intermediate levels are characterized by northwest-southeast-trending mountain ridges and valleys; the lower elevations include the steep-walled gorges where major rivers breach the remaining ridges and flow to the eastern plains.

The northwestern two-thirds of the Yungas is drained primarily by the Río Beni and its tributaries, among the most important of which are the Río Tuichi (or Machariapo) and the Río Bopi. The Río Tuichi originates high in the mountains near Pelechuco, not far from the Peruvian border, and describes a broad arc across the northern part of the subregion, flowing into the Río Beni a short distance upstream from Rurrenabaque. The Río Bopi joins the Beni at San Miguel de Huachi; its principal tributary, the Río de la Paz, has eroded upstream completely through the cordillera, and its headwaters lie in a deep canyon on the Altiplano. Between the Río Tuichi and the Río Bopi numerous other swift-flowing streams drain the high slopes of the Cordillera Real.

Farther south, where the Cordillera de Cochabamba takes a more easterly trend than the main Andean ranges, the area in the angle formed between the two cordilleras is drained by the Río Cotacajes and its tributaries, especially the Río Ayapaya. Most of the northern flank of the Cordillera de Cochabamba is drained by tributaries of the Río Mamore, chiefly by the Río Chaparé and the Río Ichilo. The warm lower valleys of this part of the subregion are sometimes referred to collectively as the Yungas de Cochabamba. Individual yungas within this section include, among others, the Yungas de Totora, the Yungas



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de Poja, and the Yungas de San Mateo; the last, located near the southeastern end of the subregion, was the scene of numerous reported sightings by local campesinos of remnants of Che Guevara's guerrilla band.

For most sections of the subregion, annual precipitation averages 30 to 65 inches. The summer months, December through February, are the wettest, but all the other months receive at least an inch of rainfall. Annual temperatures, in typical sections of the Yungas at elevations of 3,000 to 8,000 feet, range between about 60°F and 70°F; temperatures at higher elevations are considerably colder. During the day, prevailing easterly trade winds sweep warm, humid air from the lowlands up the valleys of the Yungas. As this air rises, it condenses, and the slopes at elevations of 10,000 to 13,000 feet are frequently shrouded in a dense mist that sharply reduces visibility. At night, however, local mountain breezes usually dispel the fog masses. In the lower valleys, the opposite is true, and cold damp fogs are common at night rather than during the day. The subregion is not uniformly moist; some of the deep valleys are screened from the humid easterly winds by intervening mountain ridges and experience extremely dry weather the year around. The upper valley of the Río de la Paz is an example of an area where such desert-like conditions prevail.

b. Vegetation and Land Use

The very highest parts of the Yungas -- the cold, rocky mountain slopes -- are practically devoid of vegetation (see Figure 23). Descending toward the northeast, one passes through a zone of grassy meadows with occasional bushes growing in the valley bottoms. At about 12,000 or 11,000 feet, scattered low trees mark the upper limit of the mist forest. At lower elevations, where humidity is high, stands of knobby evergreen trees become increasingly dense and mosses, lichens, ferns, and epiphytes (a non-parasitic plant) abound. Continuing down into the deep valleys, the slopes at elevations of about 9,000 to 6,000 feet support dense growths of mountain forest; even the steeper slopes are covered with vegetation (see Figure 24). The forest is characterized by a wide variety of trees and includes cecropias, tree ferns, and extensive stands of tall bamboo which, together with many smaller plants, form impenetrable thickets. In this zone the air is less humid and mosses and lichens are fewer, but most of the trees are still covered with an abundance of epiphytes. At about 6,000 feet the dense forest gives way to drier, more open woods with extensive grassy clearings and, in some places, cultivated plots. Below about 5,000 feet, high-trunked palm trees are

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Figure 23. High slopes above a Yungas valley near Coroico. Note the bend of the road near center of picture.



Figure 24. Tributary of Rio Beni near Coroico in Yungas. A small hut clings to the side of the wooded slope in background.

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increasingly common while at elevations below 3,000 feet, the vegetation of the Yungas merges with the typical dense rain forest of the Lowlands. Some of the drier mountain slopes and valleys do not exhibit the usual altitudinal zonation of vegetation, and many semibarren deserts are scattered throughout the subregion. Certain areas support dense growths of xerophytic plants including agaves and huge tree cactuses. One side of a valley may be densely forested, while the other side is only sparsely dotted with dry scrub and cactus.

Most of the subregion is sparsely settled; the only fairly large concentrations of population are in the more favored valleys where subsistence farming predominates. Some grain and potatoes are grown above the forest line, but from the upper limit of the forest down to about 6,000 feet there is almost no cultivation. The most extensively cultivated zone of the Yungas lies between elevations of about 6,000 and 3,000 feet. Oranges, bananas, lemons, and limes are grown at all altitudinal levels within this zone. Oranges ripen mainly from May to June, whereas bananas -- the most important food of the Yungas -- mature throughout the year. From about 5,000 feet downwards coca and coffee are grown in plantations prepared in stepped ridges and furrows up the steep sides of the hills. Scattered irregularly for miles over every suitable slope, the coca terraces are visible from afar, their characteristic ribbed patterns contrasting with the surrounding natural vegetation (see Figure 25). Coca leaves, the source for cocaine, are picked from the small trees or bushes three or four times a year. Cacao is grown in more humid places near the valley bottoms; it ripens in February and March. In a few particularly humid places at lower elevations cane sugar is raised. Among the many other products of the Yungas are manioc, rice, pineapples, mangoes, avocados, papayas, figs, and guavas. Usually the cultivated fields are located well up on the valley sides above the riverbeds, where slopes tend to be less steep than in the immediate vicinity of the rivers. Hilltops and ridges that are not too high may also be cultivated, but cultivated fields are almost invariably located on slopes.

Before they were largely destroyed by excessive cutting, the quina trees (Cinchona sp.) of this subregion were an important source of high-grade quinine bark, and the Yungas have also been exploited to a minor degree for rubber. The fine timber resources of the area have been little used, however, because the rugged terrain precludes low-cost logging.

Gold is found in alluvial deposits of the Río Kaka and its tributaries, occurring as small particles in the sands and

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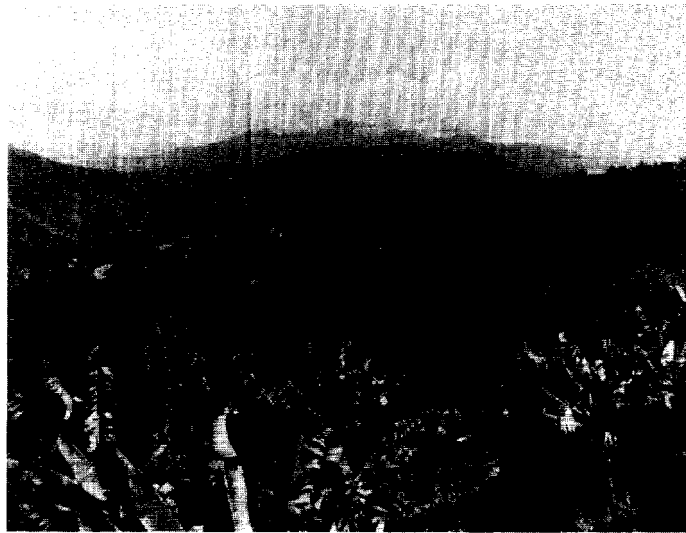


Figure 25. Cultivated slopes near Coroico in Yungas. Coca terraces are visible near center of picture, banana trees in foreground.

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gravels of the riverbanks, terraces, and riverbeds. Natives, in addition to prospectors and adventurers from all over the world, pan for gold along these Yungas streams.

25X1

## 6. Front Ranges

The eastern front ranges of the Andes encompass a belt of steep, north-south-trending sandstone ridges lying between the high mountains and valleys of central Bolivia and the Lowlands in the east. The belt varies in width from about 50 to 60 miles. The northern part of the subregion is located mostly in Santa Cruz Department; the southern part in Chuquisaca and Tarija Departments. Elevations range from slightly over 9,000 feet in the west to just under 2,000 feet in the east, with most of the ridges at about 5,000 feet.

Travel is not difficult in sections of the broader valleys of the Front Ranges where the vegetation is not too thick, but large rivers such as the Río Grande, the Río Parapeti, and the Río Pilcomayo may interrupt movement. Another problem is posed by the steep sided and, in places, densely forested ridges. Few gaps occur in their long ridges, and those that do may be occupied by unfordable streams.

### a. Terrain and Climate

The ranges are composed of parallel ridges or cuevas of brilliant red sandstone separated by longitudinal valleys. Rivers in the subregion form a trellis pattern, with the main ones -- notably the Río Grande and the Río Pilcomayo -- cutting eastward through the ridges by way of narrow, steep-sided water gaps. Most of these gaps are hard to negotiate since streams fill the valley floors and the sides of the gorges rise perpendicularly. Potholes, 3 or 4 feet deep in the rocky stream bottoms of the gorges, add to the difficulty and danger of fording, even in periods of relatively low water. Often it is easier and safer to climb over the ridges than to attempt passage through the water gaps, even though they are quite steep and may rise 3,000 feet above adjacent valleys. Few good

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passes or saddles break the sharp crestlines of the ridges. The clay binder of the sandstone and the periodically torrential rainfall make for treacherous footing and frequent landslides on many of the slopes in spite of their fairly thick protective cover of vegetation. Except where the forest is particularly dense, movement is generally freer in the longitudinal valleys between ridges; these are narrow in the west but broad and flat-floored in the east. The major impediments to such north-south movement are the large rivers.

The subregion is divided latitudinally into three sections by the Río Grande and the Río Pilcomayo. The section north of the Río Grande is the highest. One of its mountain peaks, near the village of Vallegrande, reaches an elevation of more than 9,000 feet, and much of the surrounding country lies at an elevation well over 5,000. The long parallel ridges characteristic of most of the subregion are less sharply developed in the northern section, which consists essentially of two massive highland blocks with an intervening saddle of lower terrain. The crest of the saddle (at slightly over 5,000 feet) is the site of the town of Samaipata on the highway from Cochabamba to Santa Cruz. It is an area of rocky crags, unscalable cliffs, and overhanging precipices; many of the formations are as smooth as if cut with a knife. Dark caverns penetrate the steep valley walls. The Río Yapacani, originating near Vallegrande, flows northward through a very deep canyon that separates this part of the Front Ranges Subregion from the Yungas to the northwest.

The central part of the subregion, between the Río Grande and the Río Pilcomayo, is lower and has more flat land than areas to the north and south. Most of this section lies at elevations between 2,000 and 3,000 feet. The highest ridges, in the west, are not much over 5,000 feet and are more continuous than ridges in the east. The Río Parapetí cuts across the middle of the area, passing by the town of Camiri on its way eastward to the lowlands. North of the Río Parapetí the ridges are oriented slightly to the west of north; south of the river they trend slightly to the east. The longest and most distinct mountain ridge is that of the Serranía de Aguaragüe, which extends southward from the Río Parapetí.

The southern section of the subregion stretches from the Río Pilcomayo to the Argentine border. It is characterized by distinct north-northeast-trending ridges, including that of the Serranía de Aguaragüe, which continues down from the north. The ridges are about 5,000 feet high, with individual peaks up to about 7,000 feet. Much of this section is drained by tributaries of the Río Bermejo flowing into Argentina. The

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upstream portion of the Río Grande de Tarija drains the fertile Tarija Basin but does not provide easy access to this area. The main route across the southern part of the Front Ranges goes from Tarija to Villa Montes via Entre Ríos and is reportedly very difficult.

Weather in the subregion varies widely, from freezing cold on the barren slopes of the higher mountains to stiflingly hot in the narrow enclosed canyons at lower elevations, and from dry and dusty in the sun-parched plains adjacent to the Chaco to oppressively moist and sticky in the deep, jungle-choked valleys farther west. The warmest months, October through March, frequently have temperatures in the upper 90's (Fahrenheit degrees). In the damp forests, where air circulation is slight, the hot and humid atmosphere makes physical exertion extremely tiring during the summer. During the coldest months -- June through August -- temperatures at elevations over 6,000 feet frequently drop to well below freezing. South of the latitude of Villa Montes, freezing temperatures may occur at even lower elevations. Rain falls predominantly in the summer, from October through March, although the onset of the wet season is very irregular. Precipitation for the subregion as a whole averages about 30 or 40 inches annually, with wide variations from year to year and from place to place. In general, the northern part of the subregion receives more rain than the south. The rain often takes the form of violent cloudbursts, mostly during the evening or night.

Many of the smaller streams dry up completely during the winter. Larger streams seldom run dry, although even the Rio Pilcomayo has been known to do so. When flash floods occur during the rainy season, even the smallest dry bed can become a torrential mountain stream. Some streams can be extremely dangerous because of their large drainage areas; rainwater may accumulate upstream and then rush down under a bright sky to surprise anyone in the downstream portion. These "tidal" waves have been known to sweep away entire trains of pack animals. Fords across many of the streams are frequently impassable during the rainy season.

b. Vegetation and Land Use

Much of the subregion is densely forested (see Figures 26 and 27). Up to an elevation of about 6,000 feet, many mountain slopes are covered with a wide variety of semideciduous trees, epiphytes, and lianas. Pines appear above this in isolated stands and at still higher elevations in dense stands with a rich undergrowth of ferns. Near the upper limit of the relatively narrow band of pine forest, alders are found and above

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Figure 26. Central section of Front Ranges north of Rio Parapetí. Note the sharp ridges and dense vegetation.

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Figure 27. Thick undergrowth in vicinity of abandoned guerrilla camp near Gutiérrez in central section of Front Ranges.

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them, at 7,500 or 8,000 feet, are barren slopes or alpine meadows. During the rainy season, October through March, vegetation in the semideciduous forest is thick and luxuriant and scattered clearings within the forest are covered with rich green meadows. During the dry season, April through September, however, the forest underbrush thins out considerably, many trees lose their leaves, and much of the grass withers

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Some sections of the subregion, especially the higher or more arid parts, support only sparse vegetation. In the north, on the semiarid plain about Pampa Grande, cactus and other thorny plants grow along the rocky beds of intermittent streams. East of Pampa Grande the vegetation increases in density and grades from low brush to the large trees on the green mountain slopes facing Santa Cruz. Much of the area to the east and south of Samaipata, with the exception of the tracts cleared for cultivation and the bare sandstone summits, is covered with light forest and a dense undergrowth of climbing bamboo, palms, and ferns. From Samaipata southwestward to Vallegrande the country is mostly barren, with only a few trees near some of the watercourses.

In the southeastern part of the subregion the sharp rocky crests of the long mountain ridges are usually barren. Many of the valleys have been invaded by monte, the typical vegetation of the adjacent Chaco Subregion. Monte consists of a combination of thorny brush and scrubby trees that usually reach a height of no more than 15 feet. Patches of desert, supporting only a sparse growth of cactus, are also found in some of the drier valleys.

Isolated farms, mostly devoted to subsistence agriculture, are scattered through the more fertile valleys. Frost prevents the planting of crops such as coca and coffee, but pepper, peanuts, tobacco, maize, potatoes, and a large quantity of sugarcane are cultivated with some success. The value of the rich meadowland in the area is considerably reduced for cattle because of the prevalence of poisonous herbs.

Oil is exploited at three sites in the subregion. The field at Camiri, the northernmost of the three, produces about 75 percent of Bolivia's oil and is connected by pipelines to refineries at Cochabamba and Sucre. The other fields are farther to the south, near Sanandita and at Pozos Bermejo on the Argentine border.

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C. Eastern Lowlands

The hot, humid, insect-infested, and sparsely settled Eastern Lowlands [redacted] and are far removed from most large population centers. So great is the isolation and so formidable are the barriers to movement in the region that a section in the department of El Beni has historically been used as an "open" prison.

25X1

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The Eastern Lowlands Region is a vast expanse of low, flat, and in places swampy terrain, with only a few isolated areas of higher ground rising to elevations over 2,000 feet. The region is drained to the northeast by tributaries of the Amazon River of Brazil and, to a much lesser extent, to the southeast by tributaries of the Río de la Plata system of Argentina and Paraguay. The northernmost part of the region, comprising the department of Pando and adjacent areas, is densely covered with tropical rain forest. Farther to the south, in the department of El Beni, broad bands of forest along the major rivers alternate with extensive savannas that are subject to flooding in the wet season. Continuing to the south, in Santa Cruz Department, the country is also predominantly low-lying savannaland with ribbons and patches of forest, but it includes a sizable area of hilly to mountainous terrain as well. The most southerly part of the Eastern Lowlands Region, the Bolivian Chaco or Chaco Boreal, is an extension of the Gran Chaco of Argentina and Paraguay; it is generally characterized by low, flat terrain covered by dry thorn forest, although it is extensively flooded during the rainy season.

The principal barriers to movement in the Eastern Lowlands are dense vegetation, broad rivers, and seasonally flooded savannas. The giant trees and tangled undergrowth of the northern rain forest restrict practically all movement to rivers or to narrow jungle trails. Tall coarse grasses and scattered patches of forest impede movement through the vast savannalands of El Beni and Santa Cruz. Thick forests of thorny scrub in sections of the Chaco make movement slow and painful.

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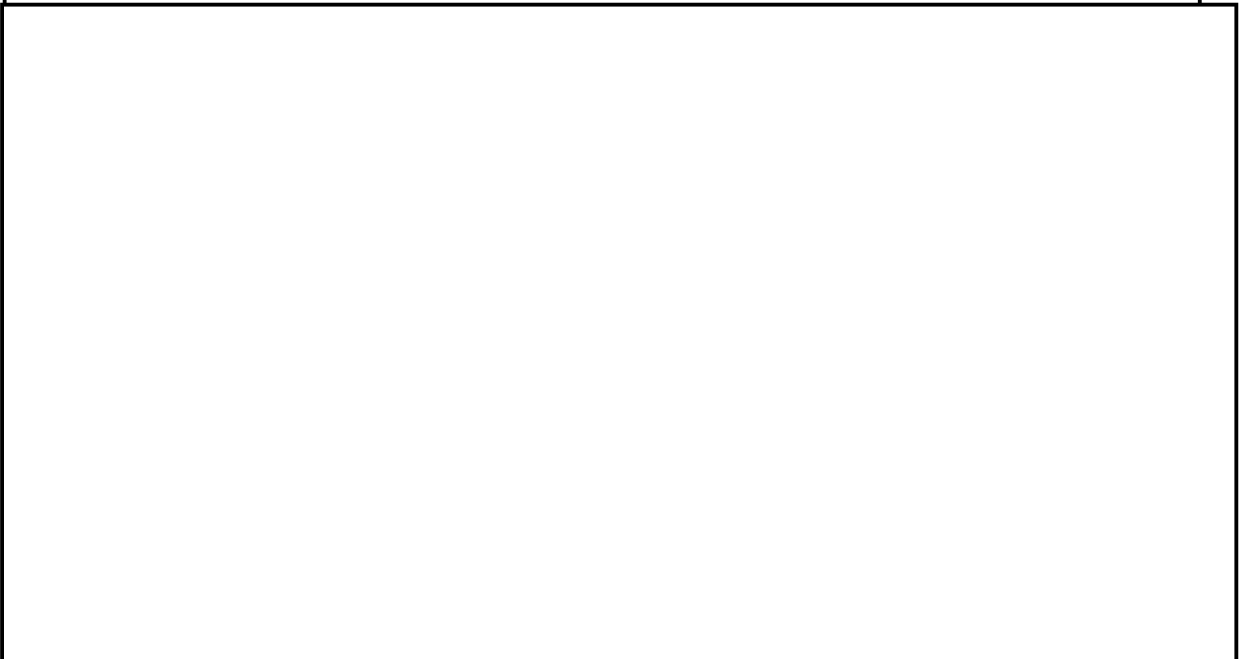
Most of the larger rivers are unfordable the year around, especially in the northern part of the region. During the wet season, even the small intermittent streams of the southern plains may become unfordable for extended periods. Steep bluffs flank short sections of the major rivers, but more serious obstacles develop when water levels drop and expose broad expanses of soft mud. The large permanent lakes and marshes may necessitate long detours for movement on foot throughout the year, but during the dry season most of the shallower water bodies are greatly reduced in size and are easily circumvented.

When seasonal floodwaters rise to several feet across the plains, movement on foot, on horseback, or by motor vehicle is ruled out over a wide area, but canoe navigation is practically unlimited in all directions. As floodwaters recede, the plains may be converted into a great morass of soft mud, dense grasses, and broad lagoons -- too shallow for canoes and too soggy for movement on foot.

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Weather conditions are best from May through September when cloudiness and thunderstorm activity are at a minimum.

The almost complete lack of radio aids to navigation, the inadequacy of aeronautical chart coverage, and the sparsity of landing facilities make flying over the area dangerous and difficult. Runways of many small airfields frequently become unserviceable during the rainy season -- the period when they are most critically needed. The broader rivers and larger lakes provide useful landing sites for seaplanes:

25X1

Helicopters can be used effectively over much of the region; the broad sandbanks along many of the larger rivers provide excellent helicopter landing sites in forested areas, and almost unlimited landing areas are available in open sections of the savannas, at least during the dry season.

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#### 1. Northern Rain Forest

The Northern Rain Forest Subregion is mostly a flat, densely forested plain, which has been largely unpopulated and underexploited since the rubber boom during the early part of the century.

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The Northern Rain Forest occupies the northernmost part of Bolivia between the Río Beni and the borders with Peru and Brazil; it includes all of Pando Department and the northern section of La Paz Department.

##### a. Terrain and Climate

Elevations within the subregion range from slightly over 1,000 feet in the southwest to slightly under 500 feet in the northeast. There are a few low hills, such as those near Cobija, but none are significant obstacles to movement or sufficiently high to provide broad views of the surrounding territory. Rivers and forests dominate the landscape (see Figure 28).

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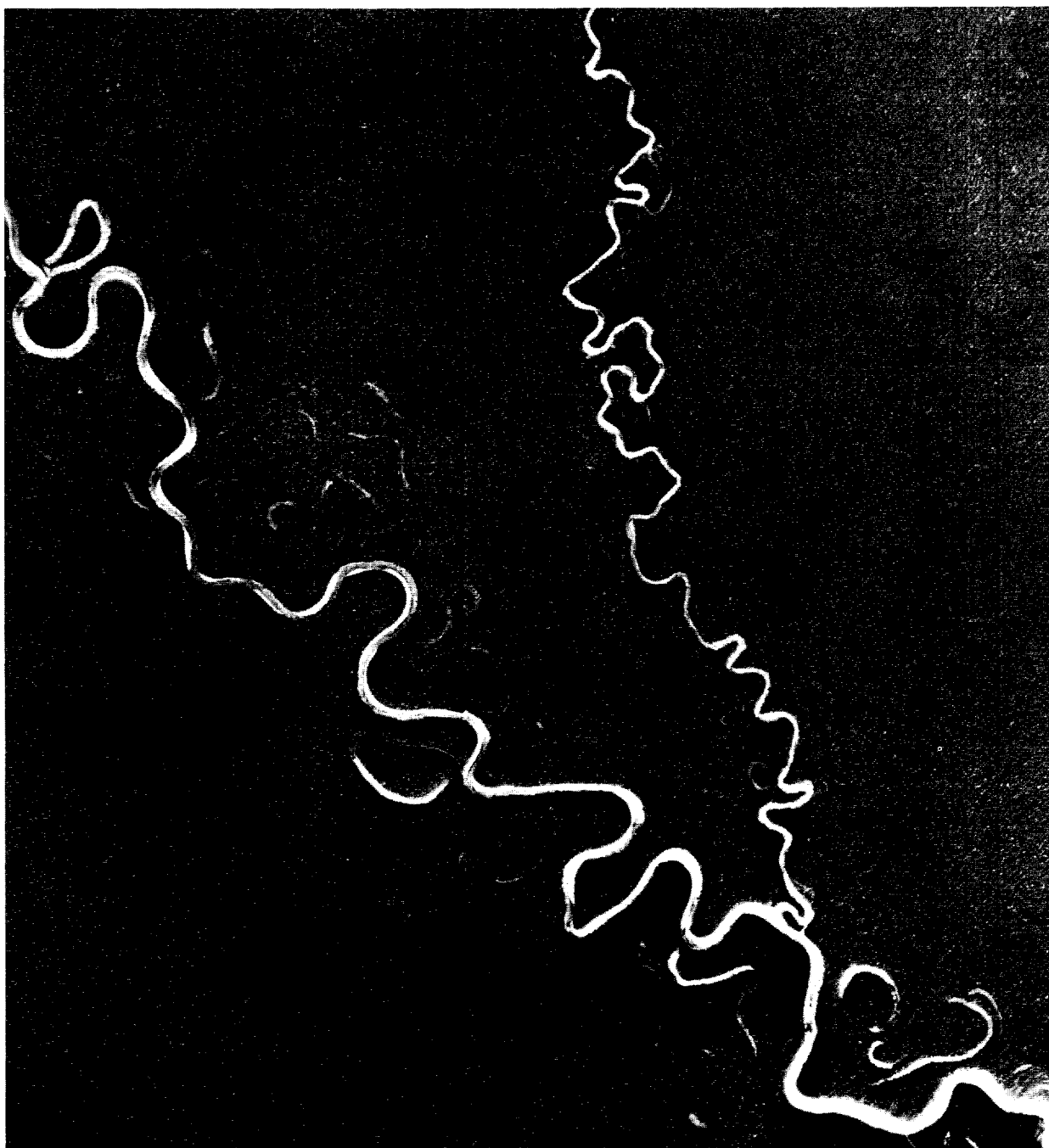


Figure 28. Dense rain forest along Peruvian frontier. The larger river is the Río Heath, which forms the boundary between Bolivia, on the right, and Peru, on the left. Note the old meander scars and oxbow lakes.

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Except for the Río Abuná and several smaller streams in the north along or near the Brazilian frontier, practically all of the subregion drains into the Río Beni, which forms most of the eastern margin of the subregion. The Beni joins the Mamore to form the Río Madera, which flows northeastward into Brazil. Principal left-bank tributaries of the Beni, moving upstream, are the Río Ortón, Río Madre de Dios, and Río Madidi. Of these, the Río Madre de Dios is the largest and most important; it is navigable upstream to the Puerto Maldonado area of Peru. In places the rivers and streams are bordered by fairly high bluffs, but there are many sandy beaches and low banks where small craft can easily be pulled ashore. The sandbanks and beaches of the larger streams and rivers also serve as useful landing sites for helicopters in a subregion where clearings in the dense forest are few and far apart. Rapids are numerous on all of the rivers so that even canoe navigation, especially on the upstream portions of the smaller streams, requires numerous portages. The subregion has no large lakes, but there are some fairly extensive marshy areas in the vicinity of Porvenir to the southeast of Cobija; these impede movement locally but can be bypassed without much difficulty.

The climate of the subregion is hot and humid. Maximum temperatures over 100°F occur in September and October; minimums as low as 45°F may occur in June. During the day, when temperatures are high, canoe travel on the larger rivers can be extremely hot and uncomfortable as there is no protection from the sun. Hacking one's way through the jungle is even more exhausting. Precipitation is abundant, ranging from about 60 to 70 inches or more annually. The rainy season extends from October or November through March or April, corresponding with the summer. In the dry winter months of June through August, water levels drop to the point where many rivers are navigable only by very shallow-draft boats. January, February, and March are generally the cloudiest months; June, July, and August are the clearest months and the best for flying.

b. Vegetation and Land Use

Dense tropical forest covers the greater part of the subregion. The huge trees form an almost continuous canopy of green, broken only here and there by a meandering stream or the horseshoe-shaped scar of an abandoned river channel. Dense vegetation makes many of the smaller streams and all minor topographic irregularities invisible from the air. The heavily overgrown banks of rivers and streams give way in places to long sandy beaches, generally backed by dense zones of tall

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cane known as caña brava. Palm trees are common along the riverbanks and are scattered throughout the jungle. In many parts of the forest the cane, tree roots and branches, underbrush, and innumerable climbers and vines combine in thick tangles that can be penetrated only with the aid of a machete. Open woods and savanna are fairly extensive in the south, especially between the Río Beni and Río Madidi; these are easier to traverse

25X1

25X1

Little of the forest has been cleared for agriculture. Small areas in the immediate vicinity of riverside villages are cultivated, and primitive Indians practice slash-and-burn agriculture in scattered forest clearings.

The whole subregion was once dotted with small rubber camps, and the names of these tiny settlements continue to be carried on many maps although the places themselves have dwindled to an insignificant few huts or have been swallowed up by the encroaching forest. Rubber is still collected, but on a smaller scale. There are no large plantations, but many wild rubber trees are scattered through the northern part of the forest, especially near the Río Madre de Dios, the Río Ortón, and other major rivers. Typically a Bolivian seringal contains about 120 scattered rubber trees. During the 3-month season, May through July, a worker taps about 40 trees a day. In the off-season he works on the brazil-nut harvest and supplements his food supply by hunting and fishing.

Brazil nuts have always been an important product of the subregion. When the nuts are ripe, in December or January, practically the entire population of many small villages moves upriver to gather them. Harvesting begins only after the nuts have fallen to the ground, since they grow too high to be picked (see Figure 29). The gatherer waits in a simple hut with a sharply inclined roof (to avoid the danger of an unexpected fall of the heavy nuts) until the wind shakes the nuts from the high branches.

## 2. El Beni

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Figure 29. Brazil-nut tree beside Rio Beni. The tall branchless boles of these typical rain-forest trees are difficult to climb.

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The El Beni corresponds roughly to the department of El Beni with the addition of a portion of the department of Santa Cruz to the south. It consists of a vast grass-covered plain laced by meandering streams and broad, forest-fringed rivers. Elevations in the subregion range from about 1,000 feet at the base of the mountains in the south to about 500 feet in the extreme north. Suffering alternately from flood and drought, the area is only sparsely settled. Large herds of semiwild cattle range the rich savannas, but there is little agricultural development.

a. Terrain and Climate

The whole central portion of the subregion is occupied by the Llanos de Mojos, a broad plain some 70,000 square miles in extent with few relief features over 10 feet high. Most of this low-lying area is seasonally covered with water. Terrain with relief over 3 feet is seldom or only briefly flooded; usually it is forested and consists of low divides and the remains of natural levees. The small amount of ground over 6 feet in height consists of rock outcrops around the margins of the Llanos and of manmade mounds -- raised fields and causeways built by the Indians in pre-Hispanic times (see Figure 30). A few isolated rock outcrops form small hills as much as 100 feet above the surrounding terrain. A series of parallel, northwest-southeast-trending ridges mostly less than 50 feet high lies near the center of the subregion just south of Santa Ana. Ridges and hills are more common and higher toward the eastern side of the subregion.

The major river in the subregion is the broad Río Mamoré, which flows northward through the center of the area. The Mamoré derives most of its waters from the Río Grande and Río Chaparé and from a whole series of long left-bank tributaries originating in the Yungas; it is a tributary of the Río Madera.

Low ground such as old meander cutoffs may contain some surface water most of the year, whereas slightly higher depressions are only seasonally flooded. The subregion has several thousand permanent lakes, ranging in size from 200-square-mile Lago Rogoaguado to small lagoons 50 or 60 feet across. Most of the lakes are no more than 5 to 10 feet deep, are enclosed by low ridges, and have no inlets or outlets but are apparently fed mainly by precipitation. They serve as important sources of fresh water, especially during the dry season when most of the small streams dry up. Most of the lakes have nearly straight sides, which are consistently oriented northeast-southwest, and many are almost square (see Figure 31).

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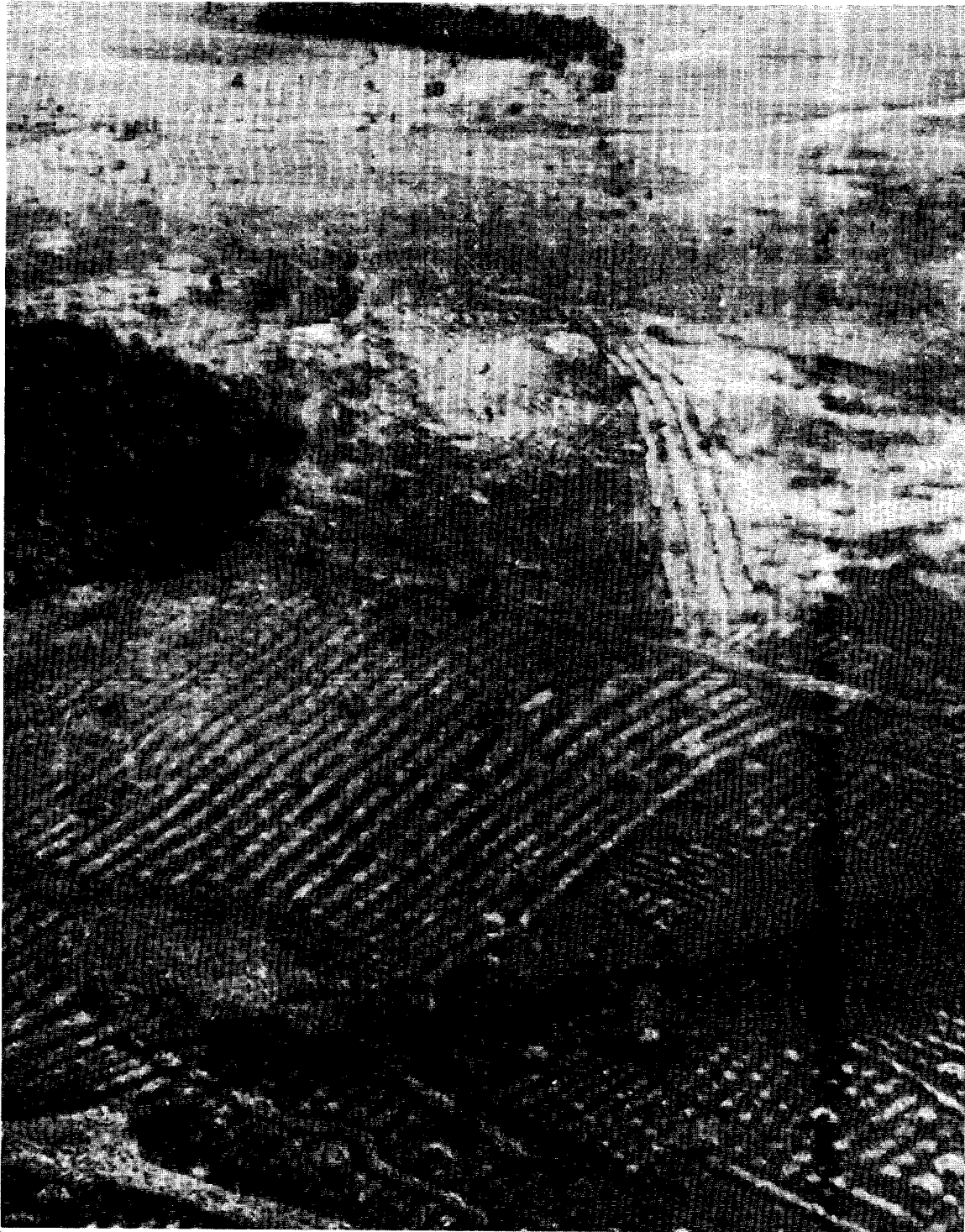


Figure 30. Ancient raised fields in the Llanos de Mojos, EI Beni Department. Note the forested islands of higher ground.

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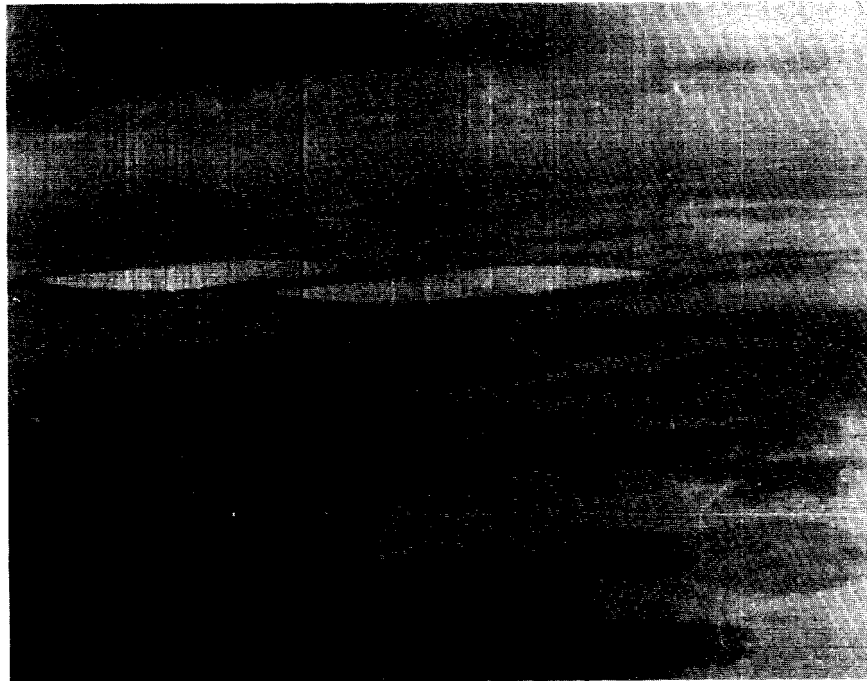


Figure 31. Rectangular lakes northwest of Trinidad. The Río Mamoré is in background.

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Weather is wet and hot during the summer, October through April, and dry and warm during the winter, May through September. At Trinidad, near the center of the subregion, the mean annual temperature is about 78°F; approximate mean monthly temperatures range from a high of 81°F in March to a low of 74°F in August, whereas absolute maximum temperatures are about 102°F toward the end of November and absolute minimum temperatures are about 50°F in June. Relative humidity is unpleasantly high only during December and January.

During the winter, cold fronts called surazos may penetrate the subregion from the south, bringing rain, strong winds, and sudden drops in temperature. The prevailing winds for most of the year are from the north and average about 3 miles per hour; surface winds up to 60 miles per hour have been reported.

Rainfall averages 60 to 70 inches a year. The dry season, including months with about 2 inches or less precipitation, usually lasts from May through September. Rainfall is heaviest from December through March and lightest from June through August. It is distributed fairly evenly over the northern and central portions of the subregion but decreases in the southeast and is considerably higher in the southwest. Todos Santos receives over 100 inches -- the highest recorded rainfall in Bolivia. The length of the wet season increases toward the southwest, which is rainy practically the year around, and decreases to about 5 months in the southeast. Rainfall varies considerably from year to year and from place to place in the same year.

The period of flooding lags about 2 months behind the rainy season. Flooding begins in late December, reaches a peak in February, and then begins to recede in late March. Overland travel may be difficult well into July because of the soft mud and pools of water. Some 40,000 square miles are inundated during the period of maximum flooding in normal years, and exceptionally high floods, invading the forested areas, may cover 60,000 square miles. The depth of flooding varies from a few inches to 5 or 6 feet. The years of major flooding in the lowlands do not correlate with the years of high local rainfall, since much of the water may be runoff from heavy rainfall in the mountains to the west.

Toward the beginning of the wet summer the subregion is lush and green, [REDACTED]

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[REDACTED] As the season progresses, the grasslands are converted into vast marshes dotted with islands and sinuous bands of gallery forest. Great flocks of birds fly overhead,

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fish from the rivers swarm over the flooded plains, and land animals seek the high ground. People rely on small boats for practically all movement (see Figure 32). During the dry season the marshes become muddy wastes filled with stagnant pools, rotting fish, and rank grass before drying out completely. Many trees lose their leaves [redacted]

25X1

25X1 [redacted]; grasses turn brown, and clay soils crack. The small rivers and pools dry up, but most of the larger rectangular lakes persist. Dusty trails and smoke from extensive grass fires sharply reduce visibility. Overland movement is easy, but fresh water is so scarce that birds migrate northward and animals converge on the permanent lakes and rivers.

b. Vegetation and Land Use

The central part of the subregion, the Llanos de Mojos, consists mainly of grassy savanna and scrub or palm savanna, with patches of forest on islands of higher ground and along the riverbanks (see Figure 33). Dense semievergreen forests border the Llanos to the northeast, north, and west; a broad band of rain forest and semievergreen forest lies to the southwest, along the margin of the Yungas; and deciduous forest covers the somewhat drier southeastern section of the subregion.

The boundary between open grassland and dense forest is quite sharp in places, but elsewhere there is a transitional zone of grass with scattered trees. Grass with few or no trees occurs where flooding normally lasts 5 months or more; on slightly higher ground that is flooded for 3 or 4 months there are usually a number of widely spaced trees; and on ground that is only briefly flooded there is generally a scrubby growth dominated by palms or by small thorny trees such as the acacia. Palm trees are particularly numerous in the eastern section of the Llanos de Mojos. Semievergreen forests grow on the natural levees and other well-drained tracts in the Llanos, but many of these have been considerably reduced by logging and by slash-and-burn agriculture. Abandoned meander channels and other depressions that retain water the year around are usually choked with tall grasses, sedges, and floating plants such as the giant water lily and water hyacinth (see Figures 34 through 36). On some of the lakes, floating mats of vegetation are thick enough to support small trees.

Cultivation in the subregion consists almost exclusively of slash-and-burn agriculture and is confined to forested areas. Large herds of cattle range over the grasslands,

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Figure 32. Canoe on flooded street in Trinidad, El Beni Department, during wet season.



Figure 33. Tall grass in the Llanos de Mojos. Palm trees grow on the higher ground.

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Figure 34. Shell Oil Company swamp buggies in the Llanos de Mojos.



Figure 35. Swamp buggy stalled in rank vegetation of old meander channel.

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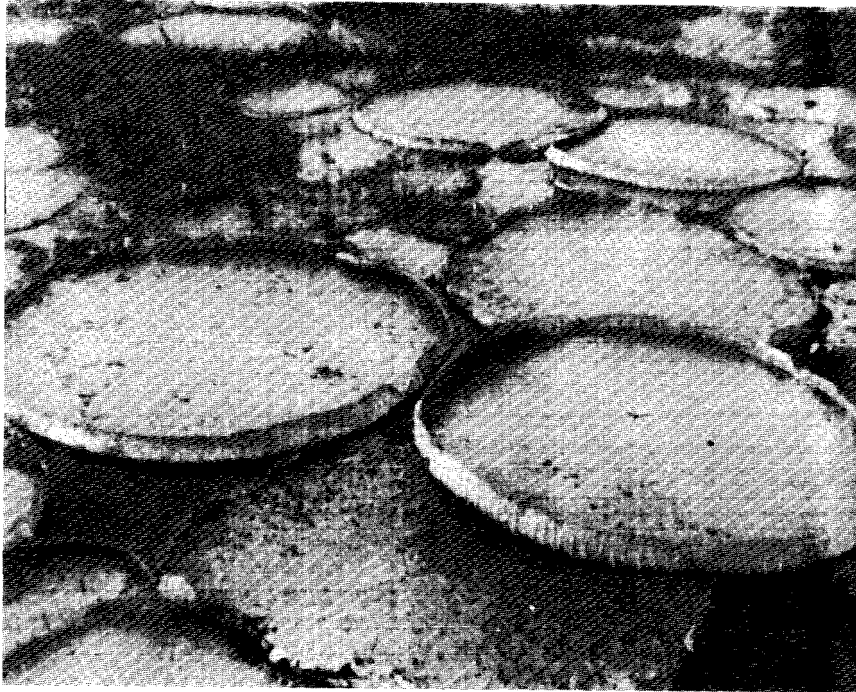


Figure 36. Giant lily pads near Santa Ana in Llanos de Mojos. Fully grown pads may reach over 6 feet in diameter.

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especially in the southern part of the Llanos between Santa Ana, Trinidad, and San Borja; [REDACTED]

Figure 37).

### 3. Santa Cruz

The Santa Cruz Subregion occupies most of the high department of Santa Cruz. It is slightly higher and considerably drier than the vast marshy lowlands to the northwest. Much of the country consists of flat to rolling savanna with scattered forests and marshes, but in a number of places low sandstone hills and mountains break the general monotony of the landscape. In general, the subregion is as sparsely settled as other sections of the Eastern Lowlands, but the area around the departmental capital of Santa Cruz, near the foot of the Front Ranges, supports a relatively large agricultural population.

#### a. Terrain and Climate

Most of the subregion lies between elevations of 1,000 and 2,000 feet, a considerable area lies between 500 and 1,000 feet, and a small marshy section in the southeast along the Brazilian border is under 500 feet. The highest and most distinct mountain range in the entire Eastern Lowlands is the Serrania de Santiago located immediately north of the railroad that crosses the southern part of the subregion from Santa Cruz to Corumba, Brazil. It is about 100 miles long, 20 miles across, and slightly over 5,000 feet in elevation at its highest point.

The principal streams draining the subregion are the Río Grande, Río Parapetí, Río San Miguel, Río San Martín, and Río Paraguay. The Río Grande flows out of the Front Ranges into the lowlands south of the town of Cabezas and swings northward in a broad arc to join the Río Mamoré; its muddy banks and swift currents combine to form a serious obstacle to movement between the important town of Santa Cruz and the area to the east (see Figure 38). A much smaller river, the Río Parapetí, flows out of the Front Ranges farther to the south

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Figure 37. Cattle on partially flooded field in Llanos de Mojos.

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Figure 38. Rio Grande south of Santa Cruz, near area where it emerges from Front Ranges to meander across lowlands.

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and then loses itself in the Bañados de Izozog, an ill-defined marshy tract roughly 2,400 square miles in extent. The Bañados de Izozog are drained to the north by intermittent streams emptying into a small lake known as the Laguna Concepción, which in turn is drained by northward-flowing tributaries of the Río San Miguel. The Río San Miguel, Río San Martín, and Río Paraguá are tributary to the Río Iténez, which forms a long portion of the Brazilian border. Small tributaries of the Río Paraguay drain the low, marshy southeastern part of the subregion.

The climate of the subregion is somewhat drier than that of areas to the northwest. Average annual rainfall is about 50 inches, most of which occurs from December through March; July and August are the driest months. Here as elsewhere in the Eastern Lowlands variations are wide, from year to year and from place to place, in the amount of precipitation and in other elements of the weather as well. Mean daily temperatures range from a maximum of 92°F in January to a minimum of 58°F in July. Santa Cruz has a recorded absolute maximum of 105°F in November. Occasionally, surazos bring cold winds from the south followed by a day or two of cool weather; they may cause freezing temperatures in the winter or temperatures as low as the mid-40's in the summer. The surazos are frequently accompanied by violent thunderstorms and destructive winds.

b. Vegetation and Land Use

Savanna woodland with palm and riverbank forest covers most of the subregion. Extensive marshes, such as the Bañados de Izozog, occupy the lower ground. Short palms are found on slightly raised hummocks in the savanna, while taller palms and trees grow where the country is more rolling and better drained. In the north a broad band of rather low and dry but dense forest flanks the Río Guaporé. To the south the vegetation grades into the still drier scrub characteristic of the Chaco. The sandstone hills and mountains of the Serranía de Santiago are mostly treeless.

By far the most important agricultural area in the Eastern Lowlands is centered on the town of Santa Cruz, which has been the focal point in recent years for new settlements and colonization projects. The main crops are sugarcane, rice, and corn. Cane is planted in November and harvested in May. Grapefruit, oranges, tangerines, bananas, and papayas also are produced. Cattle are important; herds that have been trailed down from El Beni are grazed for fattening before sale.

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Hogs and poultry are raised on small farms. Besides Santa Cruz, the areas about Concepción, San Ignacio, and Roboré are of agricultural significance.

#### 4. Chaco

The Bolivian Chaco is the northernmost part of the great lowland plain known as the Gran Chaco, which extends southward into Paraguay and Argentina. It forms a generally flat, poorly drained arc along the Paraguayan frontier east of the Front Ranges and south of the Bañados de Izozog and the Serranía de Santiago.

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##### a. Terrain and Climate

Most of the subregion lies at elevations of 500 to 2,000 feet and slopes down gently from west to east. A small isolated peak in the southwest, about 30 miles from Villa Montes, rises to slightly over 5,000 feet (some 3,000 feet above the surrounding terrain), and another peak, to the northeast not far from the Paraguayan border, rises to 2,300 feet (about 1,300 feet above the surrounding terrain); but the country is generally flat to rolling.

Permanent streams are few. The Río Pilcomayo flows out of the Front Ranges, past Villa Montes, and across the southwestern corner of the subregion. A number of small tributaries of the Río Paraguay drain the Serranía de Santiago and wind through low swampy terrain in the east near the Brazilian border. Elsewhere, the subregion is drained by a network of intermittent streams that dry up completely during the long winter dry season.

The climate alternates between extremely dry winters and wet summers. Numerous small salt lakes and salt flats scattered through the subregion reflect the great aridity of the area. Rainfall averages only 30 to 45 inches annually, practically all occurring from December through February. Drought prevails most of the remainder of the year. Temperatures are generally high the year around, but seasonal and daily ranges are greater than in areas farther north. Average daily maximums are in the upper 90's (Fahrenheit degrees) from October through January, the hottest period, and daily minimums average about 40°F from June through August, the coolest period.

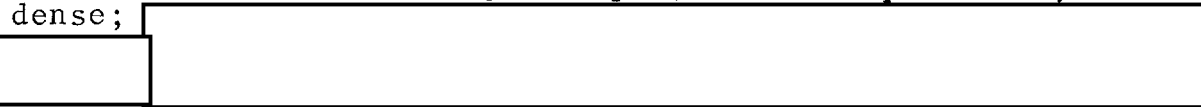
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During the rainy season, torrential downpours occur day and night, completely inundating some areas and lacing others with endless lagoons. Animals move to higher ground toward the north and west or become marooned on small islets. During the long dry season, all but a few small salty pools disappear.

b. Vegetation and Land Use

Open stands of quebracho and other hardwoods interspersed with coarse grasses and cactuses cover the sandy soils of the flat to rolling country; palm trees form dense groves on the heavier soils in shallow swales. The palm groves sometimes signal the presence of water, but more often than not the water is saline and unpotable. Extensive areas are covered by monte or chaparral, low thorn forests that can rip clothing to shreds or puncture the tires of motor vehicles. Some forests are quite open, others impenetrably dense;



Because of the sandy soil and long droughts, there is little agricultural activity in the Chaco. Goats and semi-wild herds of cattle range over the area just before the flood period. The forests remain practically untouched, except in the vicinity of the Santa Cruz-Corumbá railroad and the railroad running southward to Argentina along the margin of the Front Ranges, where they have been heavily cut for crossties.



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The principal edible crops of Bolivia, together with their harvest periods and most important places of cultivation, are listed below.

<u>Crop</u>	<u>Harvest Period</u>	<u>Location</u>
Corn	April and May	Highland valleys and area around Santa Cruz
Winter wheat	October and November	Highland valleys
Spring wheat	May through July	Altiplano
Barley	May and June	Highlands up to elevation of 9,000 feet; only forage barley at higher elevations
Rice	March through May	Santa Cruz area (upland varieties) and El Beni (irrigated or paddy varieties)
Quinoa	February and March	Altiplano
White potatoes	March through July on Altiplano; April through June at lower elevations	Altiplano and high valleys; Lago Titicaca area most productive

Quinoa is a pigweed, rich in protein and minerals; its seeds can be cooked in soups or ground to meal for bread. In addition to white potatoes, other root crops are oca (see Figure 39), a tuber grown on the Altiplano; and manioc (see Figure 40) and sweet potatoes, which are cultivated in the Lowlands. Manioc is a shrubby plant about 3 to 9 feet tall with jointed stems and deep fingerlike leaves; its large fleshy rootstalk may be cooked and eaten as a vegetable or

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Figure 39.  
Oca (Oxalis  
tuberosa),  
widely grown  
in highlands  
for forage  
and food.



Figure 40. Yuca (Manihot esculenta).  
Its tuberous root is one of the staples  
of lowlands.



Figure 41. Banana tree in the  
Yungas. Banana trees and plantains  
are very common at lower elevations.

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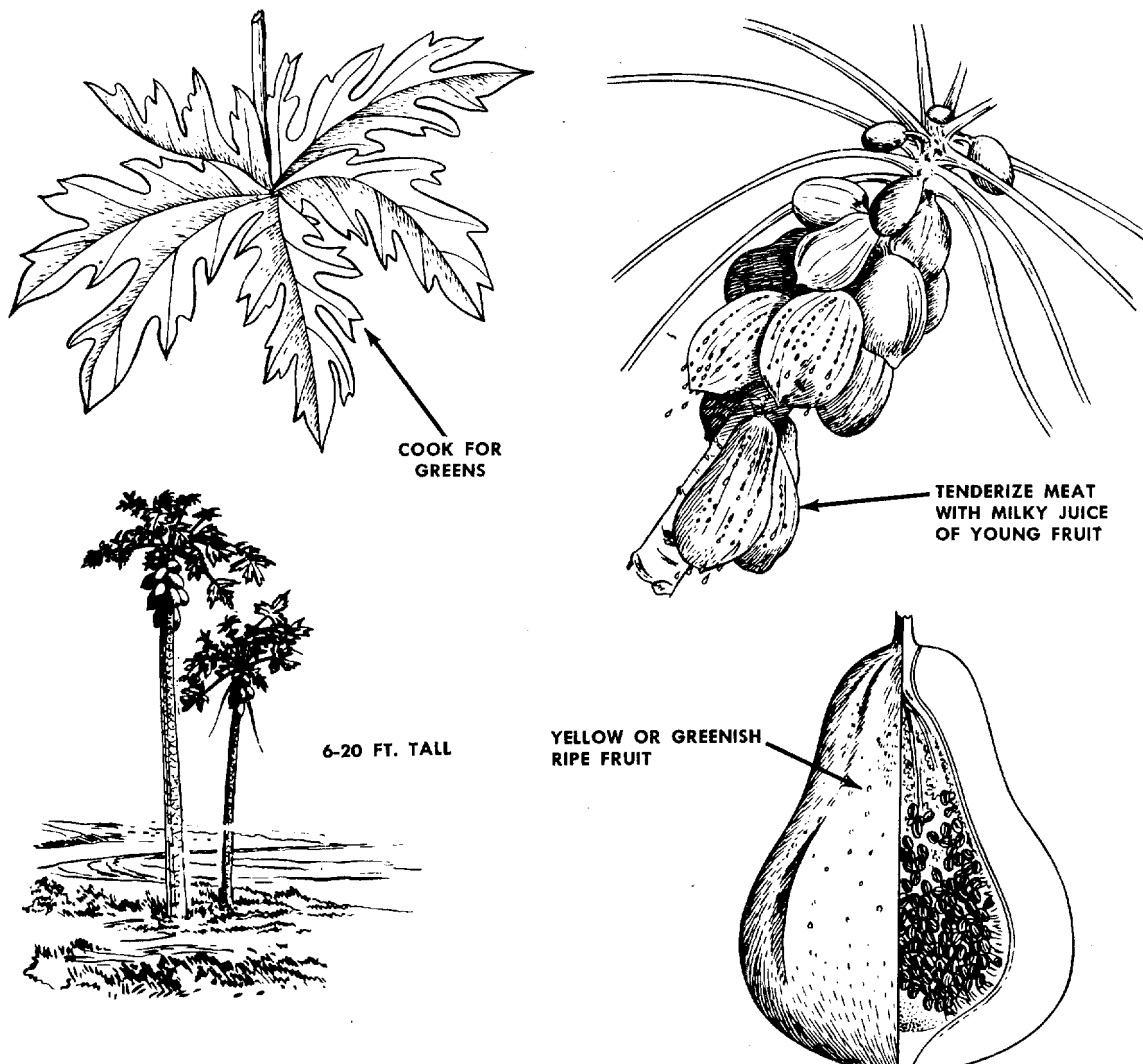


Figure 42. Papaya (Carica papaya). The fruit may be eaten raw or cooked.

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dried and used in the form of a coarse flour. Sugarcane is a major crop in the lowlands. The outer layer of the cane can be peeled off and the inner pith chewed for its refreshing and nourishing sap -- a source of quick energy.

Large quantities of tropical fruits such as oranges, bananas (see Figure 41), plantains, pineapples, mangoes, avocados, papayas (see Figure 42), figs, and guavas are grown in the Yungas and in settled parts of the Eastern Lowlands. Temperate-zone fruits such as peaches, grapes, apples, pears, and plums also are grown in the highland valleys of Cochabamba, Sucre, and Tarija.

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Mature fruits are generally more common in the rainy season, but in areas where the seasonal definition is not pronounced, as in the northern lowlands, they may be available at any time of year. Palm trees are among the most abundant and useful wild plants in the lowlands. The fruit and several other parts of many species of palm are edible. In abandoned sites of former cultivation one often can find bananas, plantains, papayas, tropical yams, and manioc. The first two are widespread in the lowlands. Papayas and tropical yams (not to be confused with the sweet potato) are common in open sunny places in the jungle, and in clearings around former habitations (see Figure 43). Yams can be recognized by their vines, which climb the trunks of trees; their tubers should always be cooked prior to eating. In many parts of the lowlands, manioc grows wild; poisonous varieties taste bitter but are edible if ground to a pulp and boiled for at least an hour. Many other varieties of wild tubers can be eaten, but care must be taken to avoid the numerous poisonous species. Sugarcane grows semiwild in many places in the lowlands. Young bamboo shoots are edible and appear in quantity in many parts of the lowlands following rains. Prickly pears, or tunas (see Figure 44), are common at lower elevations on the Altiplano, in dry locations in the Central Mountains and Valleys, and in the Yungas. They bear small sweet edible fruits. Algarroba bushes (see Figure 45), found both in the highlands and in the Chaco, yield edible pods and seeds that are much appreciated by the Indians. The bulbous root of the water lily also is eaten. Brazil nuts and many other edible kernels and seeds are available in the forests.

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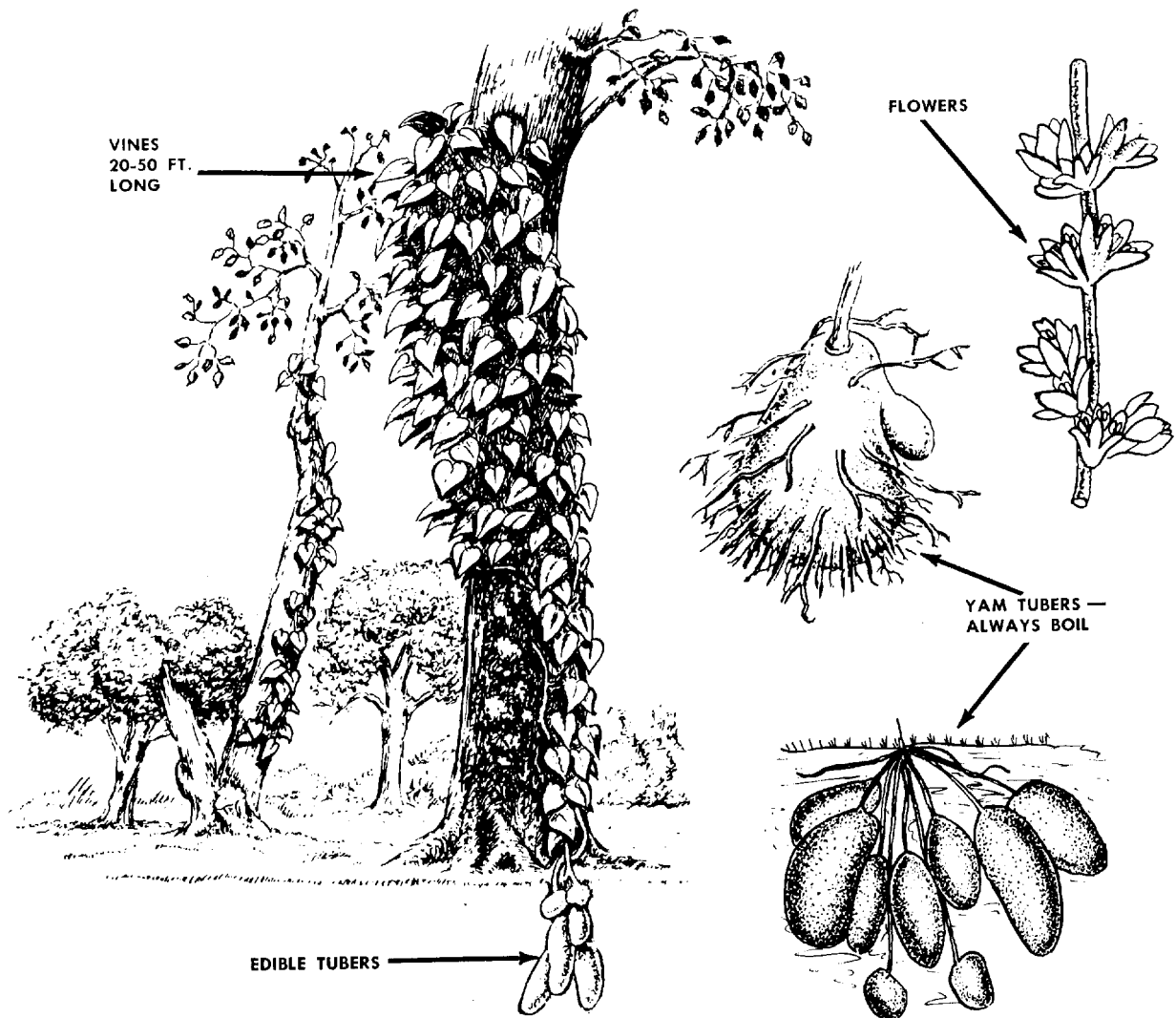


Figure 43. Tropical yam (*Dioscorea* sp.). Yams are common in jungle clearings.

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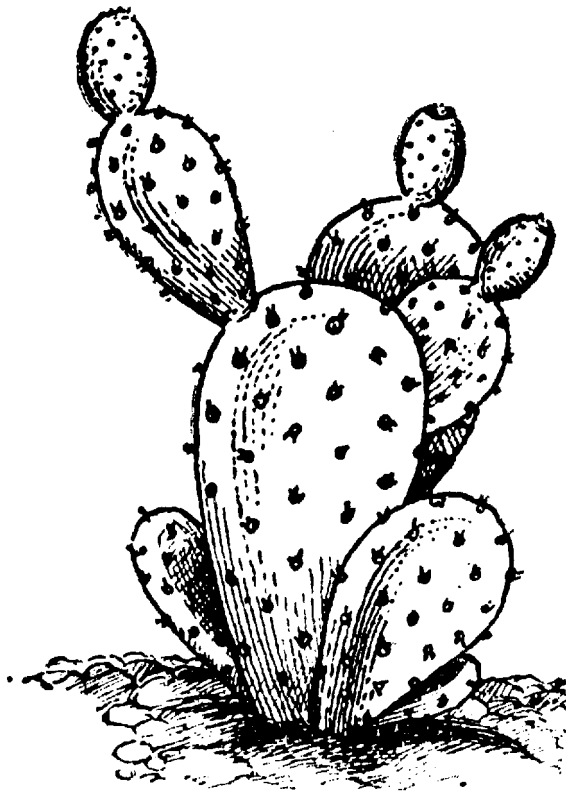


Figure 44. Prickly pear or tuna. The reddish-yellow fruit is sweet and juicy.

Figure 45. Algarroba (Prosopis sp.) which grows as bush in highlands and as tree at lower elevations. The seeds and pods are edible.



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b. Animals

Practically all animals are edible, if not always particularly savory, and even lizards and snakes can serve as food in emergency situations. Game animals and other wildlife are most abundant in the moister highland valleys and in the Eastern Lowlands, but the dry highland areas also support a significant quantity of animal life.

The animals most characteristic of the Altiplano and of other sections of the semibarren highlands are the domesticated llamas (see Figure 46) and alpacas and their wild relatives, the guanacos and vicunas. The llama is used principally as a beast of burden and the alpaca as a producer of wool. Both can be eaten as can the wild guanacos and vicunas. Guanacos are rare and the smaller vicunas are only slightly more common, but small herds occasionally may be encountered grazing in the wild recesses of the mountains. The vicunas are particularly prized for their meat and fine fur.

In addition to the llamas and alpacas, other domesticated animals -- sheep, goats, pack mules, burros, and, in some areas, cattle -- are potential sources of meat in the highlands.

25X1

A number of rodents have edible flesh. The best known are the chinchilla, vizcacha, and cavy. The chinchilla (see Figure 47) is a squirrellike animal that lives in isolated locations, burrows or crevices in rocky parts of the Altiplano and in the surrounding mountains up to elevations of about 16,000 feet. Colonies of chinchillas live on seeds of the algarroba bush, lichens, and cactus fruits. To supplement a normally bleak diet, the highland Indians search for the seeds of plants like the algarroba, which the chinchillas store in holes under rockpiles. The vizcacha (see Figure 48) is a larger animal than the chinchilla. Both species are smoked out of their holes and killed with sticks. The cavy (see Figure 49) is a tailless rodent about 1 foot long that lives in deserted parts of the Altiplano and in mountainous areas where there is enough soil to support its warrens. The smaller semidomesticated variety of cavy is the well-known guinea pig, which exists in great numbers about the Indian dwellings and serves as a convenient food.

Fish can be taken from some of the less saline lakes of the Altiplano. They abound in the marshy bays and shallow inlets around the shores. The rainbow trout of Lago Titicaca (introduced from the United States) are now quite common, and

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Figure 46. Group of llamas high in the Andes.



Chinchilla, which inhabits Altiplano and isolated mountain areas.

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Figure 48. Vizcacha, larger and more numerous than the chinchilla.

Figure 49. Cavy. Fried cavy is a popular dish among the highland Indians.



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some large specimens weigh as much as 20 pounds. Fishing nets concentrated near the mouths of rivers that enter the lake are effective in catching them during the spawning migrations. Other fish common to these lakes include catfish and several types of top minnow. The local Indians employ casting nets, reed traps, spears, and long-handled dip nets. The last may be used along the shore late in the evening when fish come into shallow water to feed or at night by torchlight from totora reed boats.

25X1

25X1

Large numbers of birds, including southern geese, ducks, grebes, coots, cormorants, gulls, plovers, snipes, avocets, curlews, ibises, and herons, are found about the margins of larger lakes such as Lago Titicaca, in small mountain tarns, and in the marshes of the Altiplano. The Indians hunt grebes in the reed marshes at night, using torches. Huge condors (see Figure 50), turkey buzzards, and a number of other carrion feeders and birds of prey also can serve as sources of meat in the highlands. The eggs of the Andean flamingos are considered a great delicacy and are easily stolen from the nesting grounds around the margins of small isolated lakes such as Lago Colorada.

Wildlife is much more abundant on the moister mountain slopes east of the lofty Cordillera Real, in the lower valleys, in the Yungas, in the Front Ranges, and in the Eastern Lowlands. Among the game animals of the high mountain slopes are two kinds of deer, the guemal and the dwarf padua (only 15 inches high), which graze in the steppes and the upper fringes of the forests at elevations between 10,000 and 16,000 feet. Other edible animals of the upper zone of trees include opossums, coatis (raccoonlike animals), and armadillos (see Figure 51). Armadillos also are found in some of the arid valleys of the Yungas and Front Ranges where near-desert conditions prevail. On the forested slopes, at somewhat lower elevations, peccaries and agoutis (see Figures 52 and 53) are numerous, and both are highly prized for their flesh. The peccary is a small wild pig; the agouti a stout-bodied rodent up to 20 inches in length. The agouti sleeps by day in holes in trees or in the ground, but it may come out in the evening or early morning. A hunter's trick is to throw stones into the air to simulate the sound of falling fruit and lure the agouti from his nest. Sloths (see Figure 54) and monkeys are common in forested areas below 3,000 feet. Monkeys can be skinned and gutted or singed whole and cooked with the skin on so that the thin layer of fat under the skin is not lost. A good roast monkey can provide food for 2 or 3 days if all parts are eaten, including the head and tail. When eaten raw the meat is tough but the liver is very tasty.

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Figure 50. Condor, giant bird of high Andes, with wing-spread up to 15 feet.

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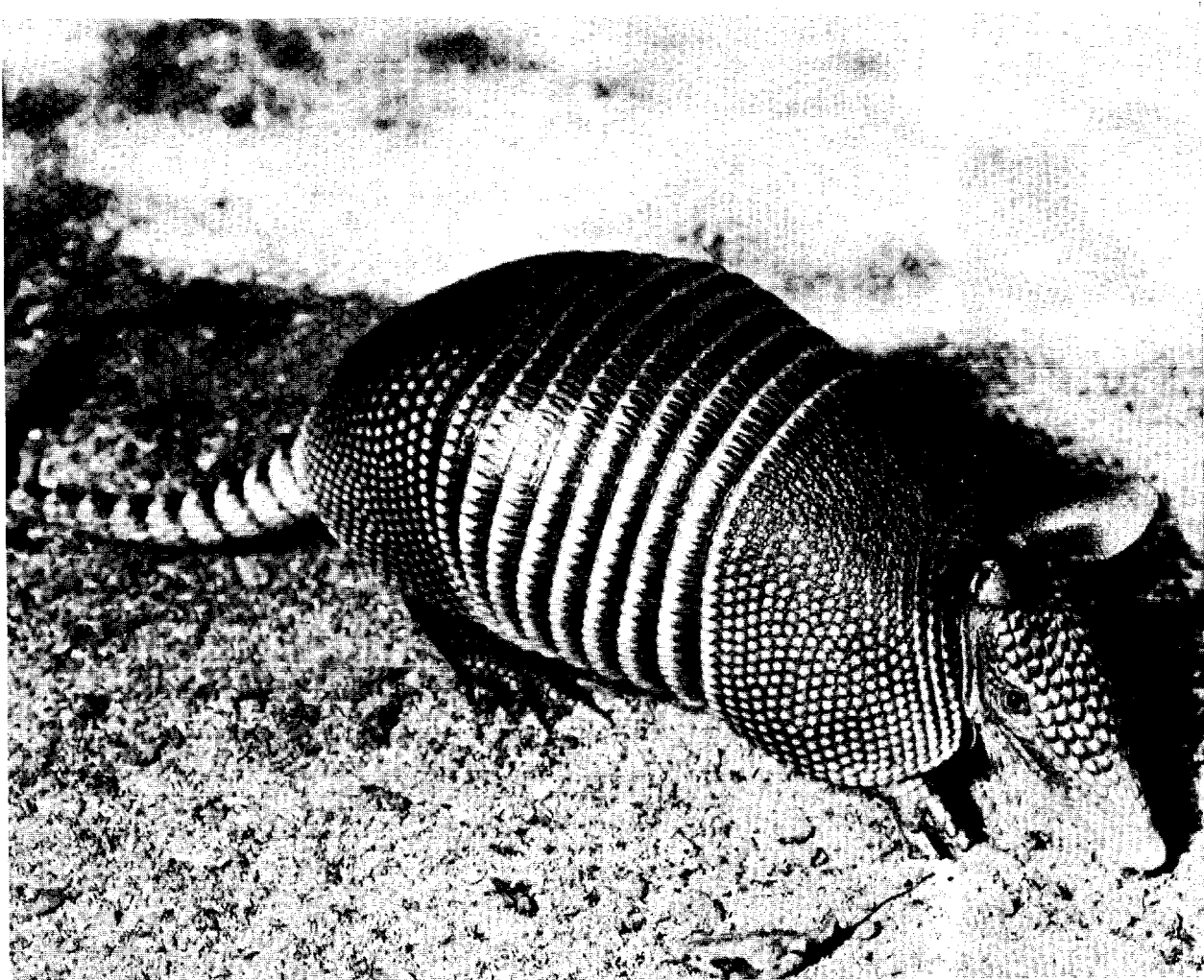


Figure 51. Armadillo, found in both mountains and lowlands.

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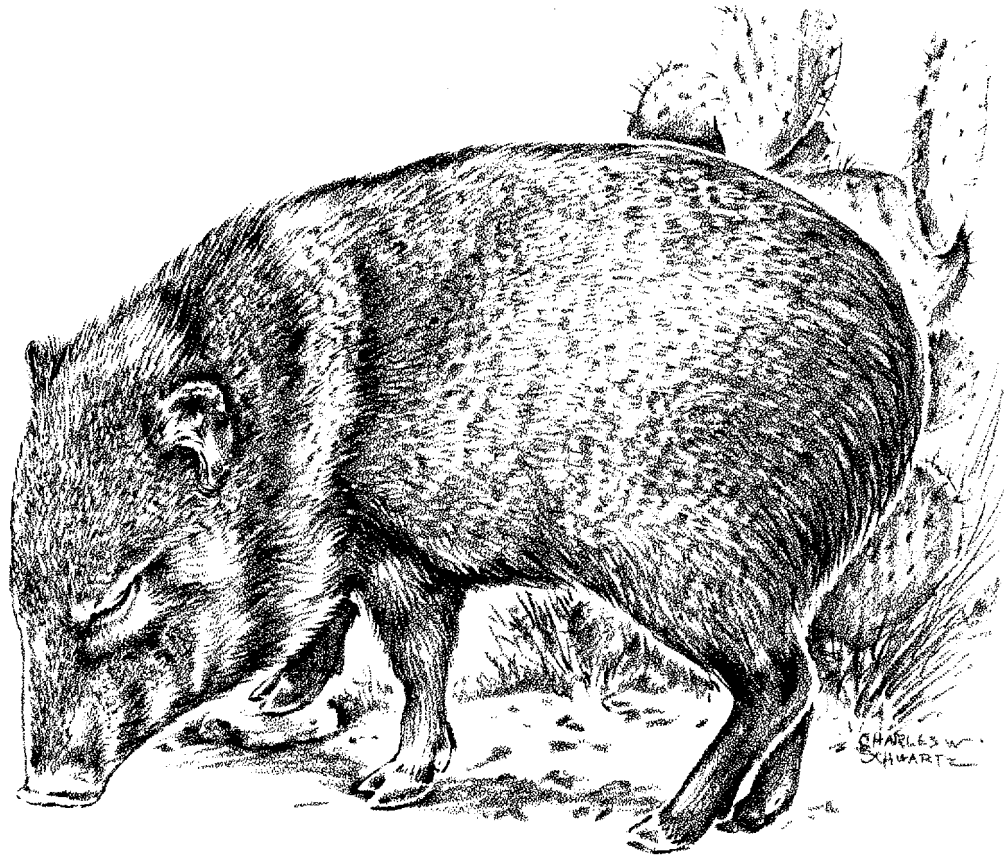


Figure 52. Collared peccary. This wild pig is smaller and less aggressive than the white-lipped peccary.



Figure 53. Agouti, rodent that lives in forested areas and is mainly nocturnal.

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In the dense forests of the lowlands, streambanks are usually the best hunting grounds. Tracks in the sand are clues to the favorite watering spots of animals, generally narrow sections of beach where the jungle comes down almost to the water's edge. Heavy forests in the vicinity of water are frequented by the tapir, a large ferocious-looking animal which is actually very shy and nonaggressive. Tapirs, rarely seen by day, often come down to the rivers at night, and their three-toed tracks are readily identified in the sand. The meat of the tapir is tough but delicious. Huge rodents called ronsocos or capybaras (see Figure 55), which frequent streambanks and marshy areas, are hunted on land and by canoe. Turtles, found along the rivers, are valuable for their palatable red meat and eggs; the latter can be discovered in the sand of the riverine beaches.

Small deer inhabit certain sections of the Chaco and the savannas. They are difficult to find when the grass is tall, but at night they approach streams or small lakes to drink. Peccaries also are found in the Chaco. Occasionally, during wet season floods, whole herds are stranded on small islands of high ground when they may be slaughtered.

25X1

Fish are plentiful in the rivers and lagoons of the Eastern Lowlands. Practically all types are edible, even the voracious and greatly feared piranhas, which are tough and boney but very tasty. The deeper holes of the rivers are often the best fishing spots. Fish can be taken with hook and line, using pieces of banana or plantain as bait. Stingrays and giant catfish (some weighing over 100 pounds) can be speared as they lie in the shallow turbid water near shore; both are good to eat. Caña brava, the tall cane that is so common along many of the streams, provides excellent material for light but durable fishing spears. The jungle Indians also employ bows and arrows, various sorts of traps, and fish poisons such as barbasco. The poisons are most effective in pools where there is little current. When flood waters recede at the onset of the dry season, many small isolated pools are left teeming with fish which can be caught very easily. Each year when the Río Pilcomayo shrinks, literally hundreds of thousands of fish are left high and dry

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Figure 54. Sloth. Hard to see in the forest, the sloth hangs motionless from branches.

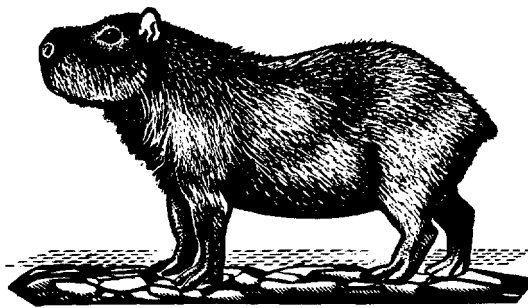


Figure 55. Ronsoco, or capybara, world's largest rodent. Ronsoco meat is a favorite food of the jaguar.

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along its banks. The fish may be cooked, eaten raw, or dried and smoked to be saved for a journey.



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25X1

Parrots and macaws have much better meat than one might imagine. In addition to a very wide variety of small birds such as thrushes and jays, some sections of the forest abound in larger species such as the pavo (turkey) and the curassow. These are often found in the trees along the riverbanks. The curassow is a large greenish-black bird whose delicious white meat is even more highly prized than that of the turkey. Herons, egrets, adjutant birds, and red-winged blackbirds are very abundant in and about the extensive marshes and lakes of the lowlands. On the open savannas and in the Chaco, flocks of rhea -- the South American equivalent of the African ostrich -- are common. These are hunted with bow and arrow or sometimes with the bola, a weapon consisting of a long cord with two or more heavy balls attached which can be thrown in such a way as to entangle the legs of the bird. The meat of the rhea is tough but edible; its large eggs also are eaten.



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Figure 56. Lago Suches in high mountains on Peruvian border.



Figure 57. Waterfall and mountain stream west of Santa Cruz.

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The southern savannas and the Chaco are subject to severe seasonal droughts. Few but the larger rivers and lakes in these sections persist throughout the year; most of the small pools of stagnant water that do remain attract large numbers of animals and usually become polluted. Vast areas of the sun-baked Chaco are completely devoid of surface water. The local Indians have wells as deep as 15 to 20 feet. If these run dry, they drink the water that collects in the hollow axils of the leaves of certain plants or dig up and suck the moisture from the bulky tuber of the cipoy (Jacaratia hassleriana). Widely scattered oases in the Chaco can be identified by the presence of palm trees; quite often, however, the water is salty and unpotable.

Where cactuses are available, their pulpy interiors can sometimes be used to assuage thirst. In forested areas about the margins of drier savannalands water often can be obtained from banana trees. With luck, a knife dug into the trunk brings forth a gush of drinkable water. Trees growing closer to the semiarid areas generally yield less water than those farther away. Certain types of lianas, or vines, common throughout most of the jungle areas, also yield appreciable amounts of water when long segments are cut and held vertically.



## 2. Natural Hazards

### a. Plants

The forests of Bolivia are rich in plants with thorns and sharp spines. Some of the larger thorns are quite tough and can inflict deep puncture wounds that easily become infected. Along the wooded riverbanks in the Yungas, canelike palms called yacitaras are much dreaded because of their barbed spines, which often lacerate unwary boatmen passing beneath their long overhanging stems. Extensive cactus forests scattered through the drier sections of the Front Ranges can

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be entered only at the risk of incurring painful wounds, and great care must be taken to prevent mounts and pack animals from injuring themselves while grazing. Sword-edged cane grass must be avoided in many sections of the savannas, and in the Chaco one must be wary of the thorny monte vegetation with its thickets of brittle prongs and branches, which can snag clothing and cause minor cuts and scratches. Even these minor wounds should be treated promptly to avoid the danger of infection.

In addition to plants that prick or scratch, there are many with poisons that cause irritating rashes on contact and others that are poisonous if eaten. Adequate clothing can provide protection from plants that are poisonous on contact, as well as from thorns. Only an intimate knowledge of the flora, or refraining from eating unknown species, can insure against the danger of consuming poisonous plants. As a general rule all plants with milky saps should be avoided. If it becomes necessary to eat an unfamiliar plant it is best to try only a small sample and reject it if the taste is bitter or otherwise disagreeable. Usually any food that monkeys eat is also safe for human consumption.

#### b. Mammals

Large predatory animals such as pumas, bears, and jaguars (see Figures 58 and 59) usually do not constitute a serious direct hazard unless wounded or cornered. Most of them give man a wide berth if possible. The puma, or mountain lion, is an extremely voracious beast who lives high in the cordilleras at the upper limits of the grasses but often descends to hunt, especially during the winter. The puma is not content unless he has destroyed a whole herd, even though he may consume only one animal. Pumas have apparently learned to avoid armed men, and they much prefer to escape rather than attack. They have been known, however, to maul unarmed Indians and children. A wounded or otherwise weakened man should be wary of pumas, especially in the winter when game is scarce.

Bears are not common, but the spectacled bear (Tremarctos ornatus) is known to inhabit the high Andean slopes, and other species are found in small numbers at lower elevations.

The jaguar ranges widely over the Eastern Lowlands and into the Andean foothill zones. A formidable animal with a massive head and weighing up to 300 pounds, the jaguar is easily capable of mauling or killing a man. The greatest danger is not to men but to their pack animals or livestock. Unlike the puma, the jaguar usually kills only a single animal

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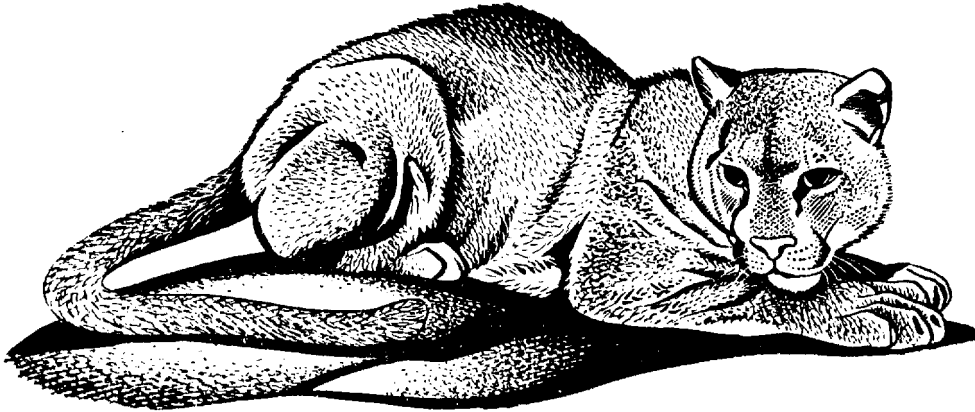


Figure 58. Puma, voracious predator of the highlands.

S-E-C-R-E-T

S-E-C-R-E-T



Figure 59. Jaguar, largest of jungle predators.

S-E-C-R-E-T

S-E-C-R-E-T

-- a guanaco for example -- and leaves after his meal. Attacks often occur at night and are generally made from the downwind side of a camp. The neighing and restlessness of mules often indicate that they sense the presence of a jaguar.

Less dangerous and much smaller than the jaguars are the tigrillos or ocelots (see Figure 60). Weighing about 35 pounds, they are mainly nocturnal, often hunt in pairs, and keep in touch with a mewling call. Tigrillos climb trees and are usually found in densely wooded country or in cane thickets. They sometimes feed on young domesticated stock and poultry and may attack a man if he surprises them in the act of eating.

White-lipped peccaries are among the most dangerous animals of the forest, especially when concentrated in a large herd. If one of these wild pigs is wounded, the whole herd, numbering as many as 100, may surround and attack the hunter with their vicious razor-sharp tusks. The most expedient means of escaping their attack is to climb a tree, but one can be stranded there for a considerable time before the beasts leave. Peccaries can be detected by the peculiar pungent odor that hangs in the air in their vicinity.

Vampire bats are common at lower elevations in the Yungas and in the Front Ranges. The vampire has needle-sharp incisor teeth with which it makes small cuts in the skin of its victim; it laps up the blood with its tongue. For some unknown reason, bats exhibit preference for certain individuals, both human and animal. Thus, even though a number of men or beasts may be available, the bats frequently attack only one or a few out of a group night after night. Very few people are awakened by the feeding of the bats because their saliva contains an ingredient that deadens the pain of the wound; the saliva also contains an anticoagulant, and, small as it is, the wound frequently continues to bleed for some time after the bat has stopped feeding. The bats transmit diseases that infect large numbers of cattle. One of the worst of these is the frequently fatal paralytic rabies, which has occasionally been transmitted to humans. Bats attack only when the victim is motionless and only in the dark. A light fends them off, and proper netting affords good protection from their attacks. Pack animals are most vulnerable to vampires and over a period of time may grow quite weak through loss of blood.

S-E-C-R-E-T

S-E-C-R-E-T



Figure 60. Ocelot, smaller than jaguar. The ocelot is usually found in thick woods.

S-E-C-R-E-T

## S-E-C-R-E-T

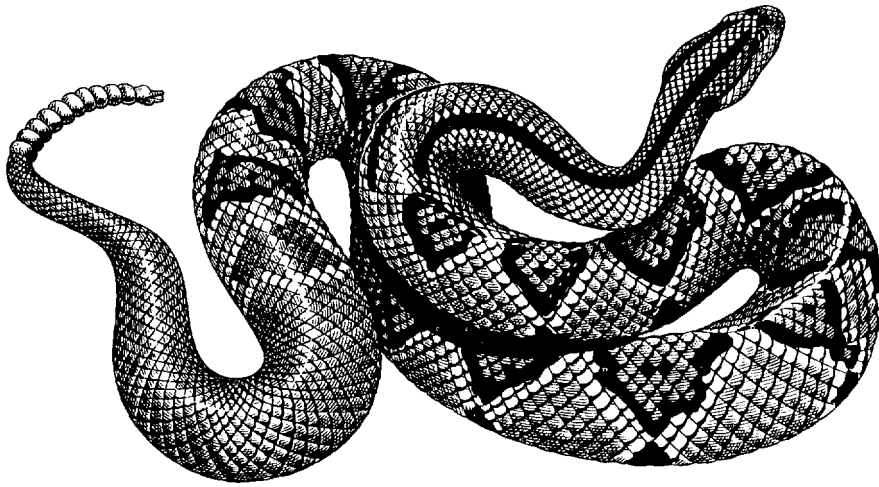
c. Reptiles and Fish

Dangerous reptiles and fish pose no hazard throughout most of the highlands. Practically all of the snakes, except a small harmless species on the Altiplano, are found at elevations below 10,000 feet. The forested lower slopes of the mountains and the vast Eastern Lowlands, on the other hand, support a fairly large number of dangerous reptiles including the fer-de-lance and several related species of pit vipers, popularly known as jararacas. Generally gray-green in color and up to 6 feet in length, these highly venomous snakes occasionally crawl onto trails or into clearings to bask in the sun. Like most other snakes, however, they are mainly nocturnal and are most dangerous at night.

Tropical rattlesnakes, bushmasters, and coral snakes (see Figure 61) also are found at lower elevations. Rattlesnakes are usually light gray or brown with black and yellow markings; large specimens can reach 8 feet in length. Very poisonous and vicious, they are most common in the hilly, drier sections of the Front Ranges, not in the thickly forested areas. Bushmasters are reddish yellow with dark brown or black markings; sometimes measuring in excess of 10 feet, they have exceptionally large fangs and a reputation for aggressiveness. They prefer dry ground in densely wooded areas and often hide in animal burrows. Coral snakes are small -- usually about 2 feet long -- and brightly colored with red, black, and yellow or white bands. Generally sluggish and nonaggressive, they are likely to attack only if stepped on or otherwise directly molested. Their fangs are very small and are dangerous only to exposed portions of the body, such as bared hands or feet, but their venom is exceptionally potent and a bite may well be fatal. Coral snakes strike with a peculiar side-swinging motion, twisting their heads to one side if they are picked up or stepped on. They are found in almost every type of terrain at lower elevations, usually living in holes in the ground.

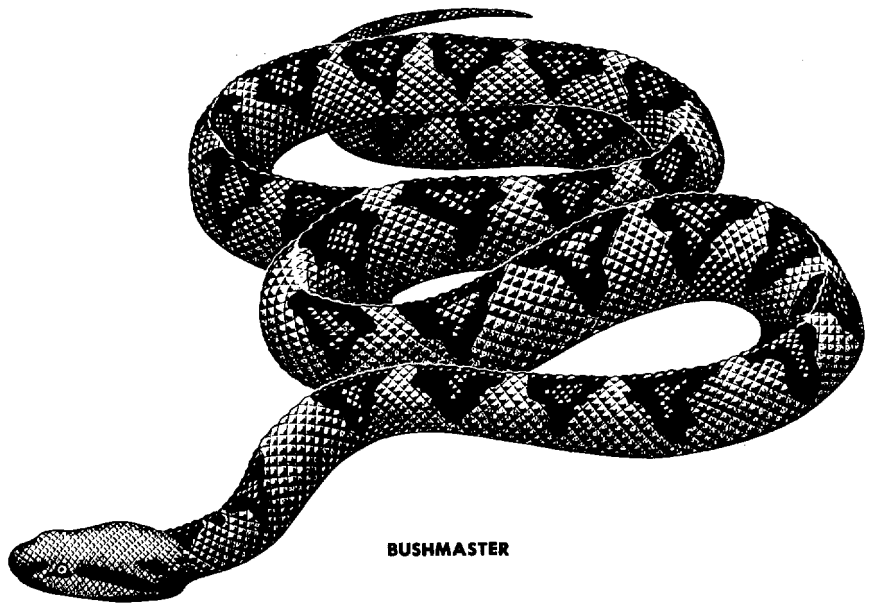
Another greatly feared poisonous snake is the loro machacuy or so-called parrot cobra. Usually olive green and up to almost 7 feet long, it hangs from trees in the lowland forest, sometimes over trails or streams, and attacks its victim by biting the face, neck, or shoulder. It is best to avoid traveling at night on foot through snake country, especially in forested areas, and to look first before stepping over fallen logs or reaching hands into rocky crevices when climbing. Good boots provide excellent protection against most snake attacks, and loose trouser legs are probably better than those stuffed in the tops of boots. Men have been saved

S-E-C-R-E-T



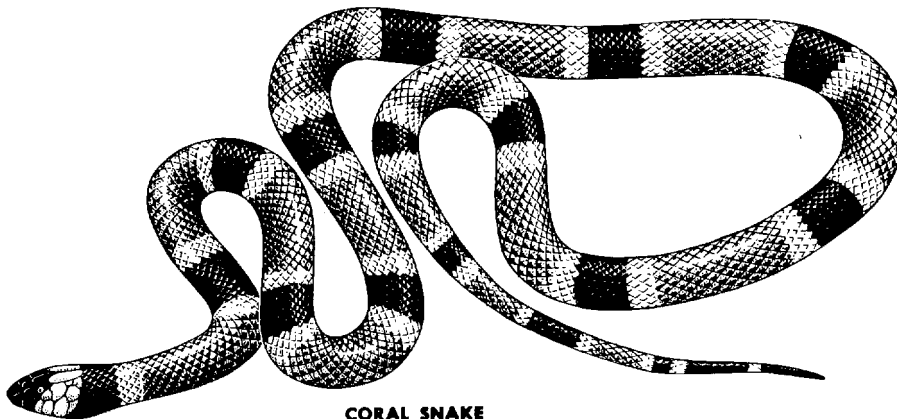
A

Figures 61 (A, B and C). Tropical rattlesnake, bushmaster, and coral snake - three of the most dangerous reptiles of low-lands.



BUSHMASTER

B



CORAL SNAKE

C

S-E-C-R-E-T



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from snake bite when the striking reptile fastened its fangs in the flapping trousers instead of the leg itself.

Many lakes and rivers of the Eastern Lowlands are infested with caymans, large reptiles similar to crocodiles. Some of the bigger ones reach lengths over 15 feet. Although relatively awkward on land, caymans can raise their bodies on stumpy legs and run with surprising speed for short distances. Caymans sunning themselves on shore should be approached cautiously. Most will slither away into the water at one's approach, but hungry individuals occasionally rush toward an intruder. The long powerful tail is capable of knocking a man flat and within reach of the tooth-studded jaws. In the water, powerful strokes from the tail propel a cayman so rapidly that escape from its attack is very difficult. To dangle arms or legs over the side of a canoe in areas known to be inhabited by caymans invites disaster.

Fresh-water stingrays, known as rayas (see Figures 62 and 63), are found in many of the lowland rivers and even in some of the larger streams of the Yungas such as the Río Alto Beni. These leathery, repulsive-looking flat fish are sometimes as much as 1-1/2 feet across. Their venom can paralyze a man within minutes. The ray's sting or venom apparatus consists of a sharp spine of hard boney material about 6 to 8 inches long enveloped in a sheath of skin. An integral part of the ray's long whiplike tail, it can be lashed forward like the sting of a scorpion. The venom is produced in spongy tissues occupying grooves in the sting. A series of sharp recurved teeth or barbs along either side of the sting make it very difficult and painful to remove from a wound. Stingrays commonly lie almost completely buried in the upper layer of a sandy or muddy bottom and are a definite hazard to anyone wading. The chief danger is in stepping on one. When the body of the ray is pinned down by the weight of the victim, the fish can make a successful strike with its sting. This danger can largely be eliminated by pushing or shuffling one's feet along the bottom. It is also recommended that the bottom first be probed with a stick in order to rid the area of hidden rays. Although injuries from rays occur most frequently about the ankle joint and foot, chest wounds have also been reported. In addition to extreme pain, a wound may cause vomiting, diarrhea, muscular paralysis, and death.

The much dreaded piranha, or palometa (see Figures 64 and 65), is common in many parts of the Eastern Lowlands, and great caution should be exercised to avoid it when entering unfamiliar waters. It is particularly dangerous

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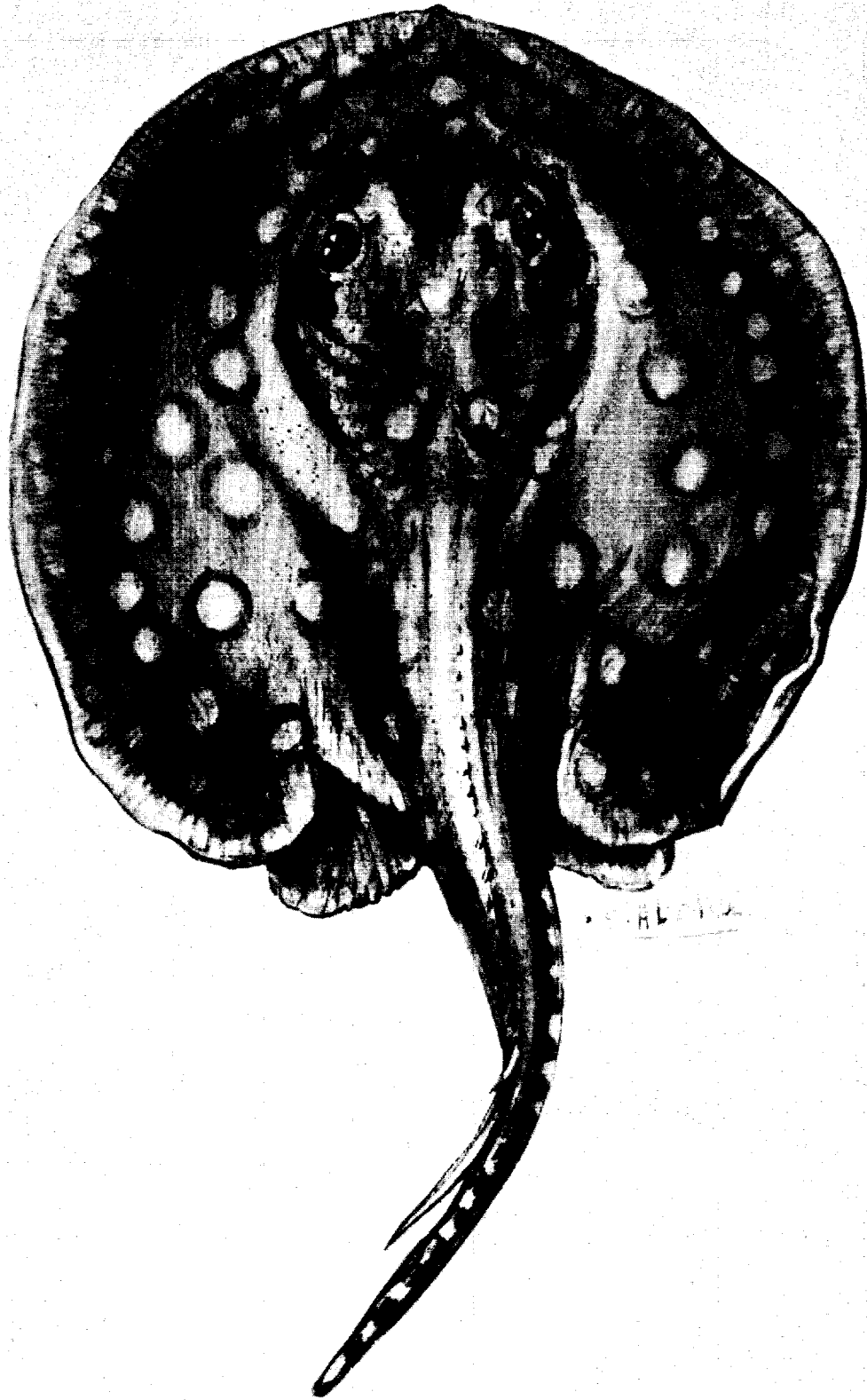


Figure 62. Fresh-water stingray common in lowland rivers.  
Note the sting in the tail.

S-E-C-R-E-T

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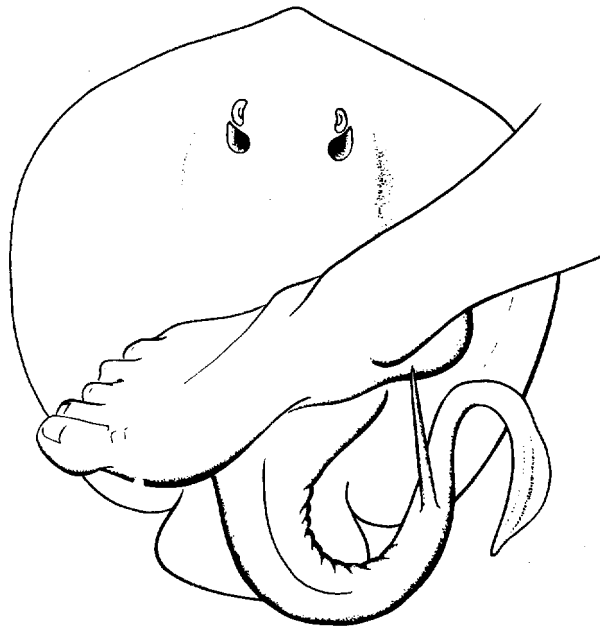


Figure 63. Stingray making a strike. Most wounds are inflicted on the foot or ankle.

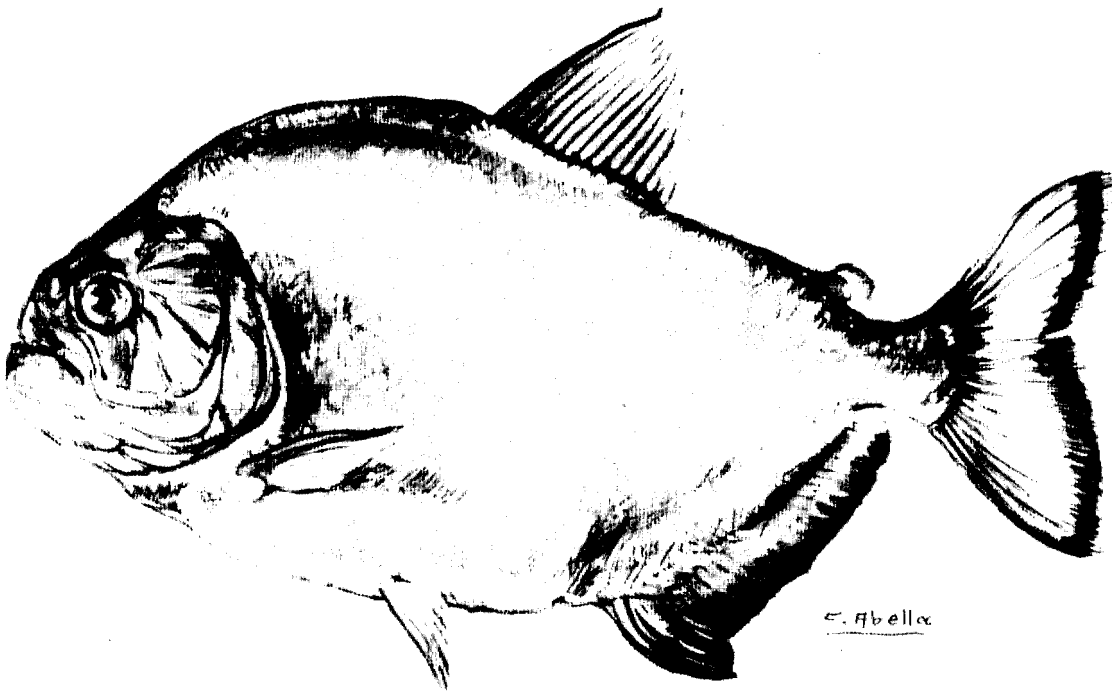


Figure 64. Piranha, terror of lowland streams.

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to enter a stream if one has an open wound or sore. When attracted by blood, large numbers of the small but ferocious fish may immediately attack and devour man or beast. Their powerful jaws and razor-sharp teeth can reduce even a large animal to a bare skeleton within minutes. Indians crossing streams thought to be infested with piranhas do so with one hand guarding their genitals.

Another hazard in the waters of the Eastern Lowlands, especially in the larger rivers with sandy bottoms, is a loathsome, wormlike little catfish known as the canero (see Figure 66). In its juvenile stage it measures only 2 to 3 inches long by a small fraction of an inch thick, and it can enter any orifice of the human body; after entering the body it is likely to become wedged in by its fin-spines and may cause painful hemorrhages and even death. In its adult stage the canero reaches lengths up to 7 or 8 inches and will attack man as well as other animals, inflicting nasty circular wounds from which it sucks the blood.

Electric eels are found in the marshes, lagoons, and other quiet waters of the Eastern Lowlands. These fish are not true eels but belong to the same group as the carp. Adults are olive brown with brilliant orange under the head and throat. Some of the larger ones attain lengths of 6 to 7 feet and are capable of delivering very powerful electric shocks. They often stun horses and mules fording streams or marshy areas. A man ordinarily is not killed outright by the shock of one of these creatures, but he may be knocked insensible and drown. Electric eels are particularly dangerous when they attack in a group.

In addition to the various kinds of dangerous fish, many lakes and pools in the lowlands are infested with bloodsucking leeches that attach themselves to the bare skin of any human who enters their waters. Leeches are usually black or brown, and those that attack humans are up to an inch or so in length. They have two suckers with which they firmly attach themselves to the skin. Their bite is relatively painless and may go unnoticed. If interrupted, the animal will fill its body with blood and then drop off its victim. A firmly attached leech should be removed carefully because the jaws are buried in the wound, and if they are broken off infection may result. The best way to remove a leech is to put a little salt on it or hold a lighted cigarette near its body; this often causes the worm to turn loose of its own accord. A feeding leech secretes a material that keeps the blood from clotting, so the wound is likely to bleed for some time after the parasite

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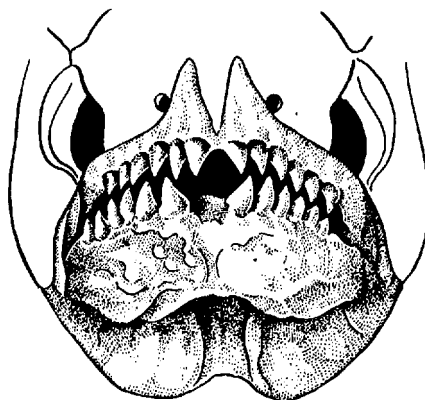


Figure 65. Dentition of a Piranha.

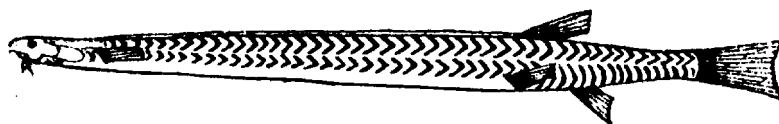


Figure 66. Canero, one of scourges of low-land rivers.

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is removed. This bleeding should be stopped by pressure. Very small leeches sometimes get into the mouth as a result of drinking unsterilized water. They may attach themselves to the soft tissues in the mouth or nasal passages and in such cases should be removed by a physician.

d. Insects and Arachnids

Insects and arachnids, by far nature's greatest threat to survival in many parts of Bolivia, are particularly abundant in the lowlands. Among those that transmit serious diseases are mosquitoes, mites, fleas, ticks, and lice. Malaria, encephalitis, and dengue may be carried by mosquitoes; hemorrhagic fever by mites; typhus and bubonic plague by fleas; relapsing fever by ticks; and typhus by lice (see 4, Principal Diseases in Bolivia).

Wasps, bees, ants, spiders, scorpions, and centipedes are plentiful in the lowlands. Stings and bites from these pests can be painful and dangerous and should be carefully avoided. Caution should be used when climbing trees, for their branches and foliage are often alive with biting ants. Certain species of small hollow-stemmed cecropias, very common in clearings, host myriads of tiny brown stinging ants. The palo santo, a tall slender tree with a hollow trunk, is often filled with fire ants, vicious insects whose bites smart and burn for many hours after they are inflicted. Boots, shoes, and other clothing should always be carefully examined and shaken in the morning to rid them of scorpions. The venom of certain species of scorpions is harmless to humans, but that of others is extremely toxic and may cause severe illness or even death. Minor insect bites and stings should be treated with cold compresses or mud applied locally; more serious cases may call for the use of antivenom serums and other medicine.

Upon entering the marshy areas of the Eastern Lowlands, one is likely to be enveloped by huge clouds of mosquitoes. As the day progresses, one species is replaced by another. The anopheles are most active about dusk. Even worse than the mosquitoes are the swarms of little flies (piumes, marihuis, and mantas blancas), which are small enough to pass through ordinary mosquito netting. Hands and feet soon become completely covered with tiny blisters and sores where the flies have fed. More annoying still are the small sweat-bees, exasperating insects no larger than house flies, which dart about getting into one's ears, eyes, nose, and mouth; they do not sting, but their continuous harassment is maddening. Smoke from a campfire sometimes discourages

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most of these flying insects, especially the smoke produced by the wood of the palo santo.

Some sections are relatively free of certain insect pests but abound in others. For example, the country about Rurrenabaque, where the Río Beni emerges from the Yungas, is relatively free of mosquitoes and piume flies but is plagued with a species of blow fly. This insidious pest lays its eggs in moist clothing. Its larva, known as the screw worm, when hatched by the heat of the body, bores into the skin and develops into a grub about an inch in length. As the grub digs to enlarge its living quarters, the sensation is that of being drilled with an auger. The local campesinos usually apply tobacco juice over the sore spot and squeeze the worm out -- a very painful operation. Clothing should be dried out completely whenever possible to avoid infestation by blow flies.

Small sand fleas, tropical chiggers called aniguas, are widespread. These insects deposit their eggs in the tender, soft skin between the toes, where they develop in a small sac about the size of a pea. They should be cut out with a sterilized knife.

e. Weather

On the Altiplano and in the surrounding mountains the air is exceptionally thin and clear; daytime temperatures are usually pleasantly cool and never enervating. This coolness at high altitudes, however, tends to make one unwary of the danger of sunburn. The direct actinic rays of the sun, unfiltered by the thin atmosphere and reinforced by reflected light from salt flats or other barren surfaces, can burn the face and hands severely. Prolonged exposure to the sun, even when not immediately uncomfortable, always should be avoided. The dryness of the air can also lead to parching of the skin, especially on the lips, the fingertips, and between the fingers, and generous doses of ointment should be applied to prevent cracking. At night, freezing temperatures combined with fierce winds and occasional heavy snowfalls are major dangers in the mountains, and warm clothing and bedding are essential, especially where shelter is unavailable (see Figure 67).

Newcomers to the highlands often suffer from the mountain sickness known as soroche or puna, which is caused by a deficiency of oxygen in the atmosphere at high altitudes. Many people begin to suffer at about 12,000 or 13,000 feet. The symptoms include headache, nausea, nosebleed, dizziness, a

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Figure 67. Camp beside glacier in northern Cordillera Real. This group is well clothed and equipped for survival in the high mountains.

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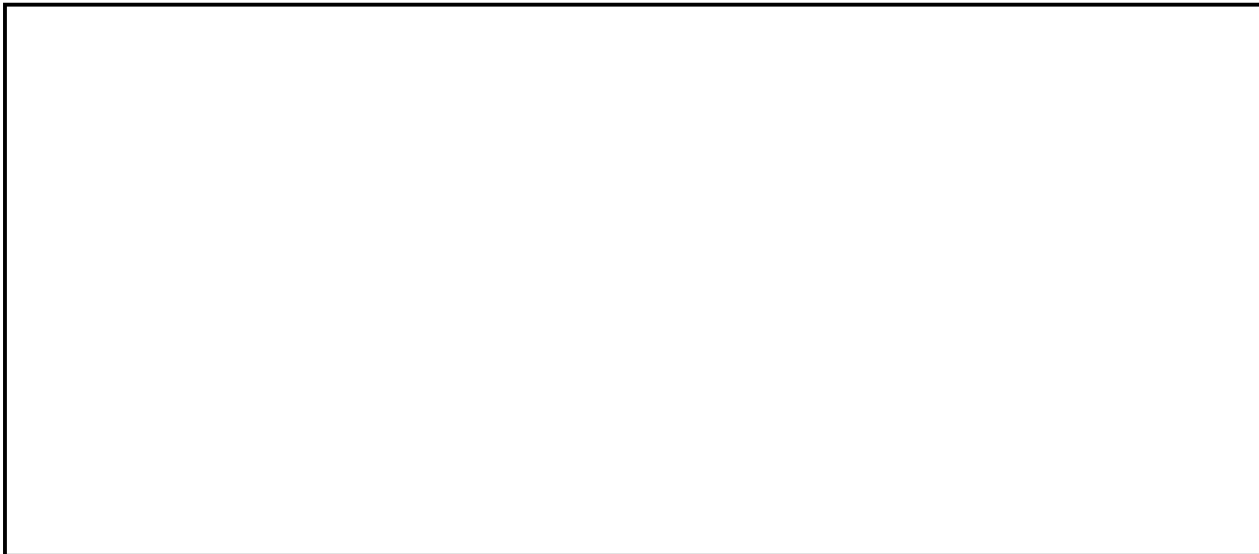


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tendency to gasp, and a weakness that makes almost any physical exertion very difficult. The higher the altitude, the worse the symptoms are likely to be; extreme cases may result in death. Attacks of soroche should always be anticipated when climbing in mountainous country over 15,000 feet. Rest or retreat to lower elevations is usually the only effective means of finding relief. Within a few days most people become adjusted to living at high altitudes and the symptoms of soroche disappear.

In contrast to the cool highlands, the jungles and savannas of the Eastern Lowlands are often uncomfortably hot and humid, particularly during the summer wet season. The oppressive air greatly reduces human endurance, and exhaustion comes on rapidly with any strenuous exercise. Minor cuts and wounds that ordinarily might be ignored must receive very careful treatment or they will not heal. Clothing and equipment are constantly soaked from downpours, and provisions are spoiled by mold and mildew unless well protected and ventilated. Sunstroke and heat prostration must be guarded against on the open savannas and in the vast shadeless portions of the Chaco.

### 3. The Human Element



25X1

The highlanders of Bolivia, mostly Aymara and Quechua Indians, are nonaggressive types who seldom offer direct physical violence. Generally sullen and unfriendly toward strangers, they become openly hostile only when drunk. Great tact and patience are required to overcome their morbid distrust of the white man, which is based on centuries of persecution. Through

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scrupulously fair treatment, however, one can eventually gain the Indians' confidence.

If the cooperation of an entire community is desired, it may be wise to seek out the local medicine men. These are divided into a number of classes, each with its own special field of healing or magic. By far the most important and influential are the occult wizards called chamakani; no action of any importance is undertaken by an Indian community without the knowledge and consent of the local chamakani. His identity is usually kept secret from outsiders and can be ascertained only through careful observation over a long period. Generally, he is an older man who wears humble dress and no token of distinction or authority. Having discovered him, he should be addressed respectfully as hacha-tata, or "great father", and amply rewarded for any of his services.

Travelers in remote sections of the highlands have observed that through sheer pigheadedness the Indians sometimes are unwilling to sell food or other necessities even for fabulously high prices. In such cases the best course of action is simply to take what is needed and leave a fair payment; the Indians will make no resistance and will be perfectly satisfied with the transaction. In some areas coca or other items are more acceptable forms of payment than money.

The cholos, or mestizos, are generally much easier to deal with than the pureblooded Indians. They too have their unattractive traits of temperament, however, and many observers, perhaps overcritical, have noted their greed and treachery. It should be remembered that "cholo" is a term of contempt, corresponding roughly to "dog" in English, and no mestizo is pleased to be addressed as such.

The wild Indians of the Eastern Lowlands have been greatly reduced in numbers. Many have been pacified and brought into missionary camps; others live practically as slaves on the cattle ranches of the area. In the most remote sections, however, especially in the densely forested areas, a few completely savage tribes still exist. Some of these groups are warlike and aggressive and will attempt to repulse or destroy anyone who enters their territory. In most instances, however, their actions are motivated by fear and a desire to defend themselves against intruders. Individuals or small unarmed bands that display no hostile intentions ordinarily are safe from their attacks.

If contact is desired with the jungle Indians, weapons should never be displayed, and hunting with rifles should be

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temporarily halted. Presents such as beads or bush knives may be placed at spots that the Indians are known to frequent in order to initiate contact. In making the initial personal contact, one should leave conspicuous equipment behind and remove clothing so as to appear more natural to the Indians (see Figure 68). After mutual confidence has been established, supplies and equipment may be brought forward. A shotgun and medicine are very helpful. By contributing to the food supply and curing the sick, one may become enough of an asset to the tribe to be tolerated. Even when the Indians appear to be friendly, however, great care should be taken never to alarm them. A group of missionaries recently was slaughtered after a friendly reception by the Indians.

The Indians can be of tremendous aid in identifying edible and poisonous plants, finding game, treating wounds, and providing a host of other services indispensable for survival in remote regions. On the other hand, they can be formidable foes. A few have acquired shotguns or old muzzle loaders, but their main weapon is usually the bow and arrow with which they are expert marksmen. Their arrows often are set with multiple barbs that are extremely difficult to withdraw from a body wound. Other weapons in their armory may include spears, cudgels, sword-edged clubs, and fish-spine knuckle dusters. Some of the tribes in the northern rain forest also use blowguns with curare-poisoned darts. If hit by a dart, one should remove it immediately and, if possible, suck out the poison. The doses are ordinarily sub-lethal to humans but may cause partial paralysis and violent illness. Fortunately, blowguns are used mostly for hunting and not for warfare.

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Figure 68. First contact between wild jungle Indians and missionaries. The missionaries have removed their shirts in order to identify themselves with the natives. Note the longbows and enormous arrows.

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4. Principal Diseases in Bolivia

Source of Disease	Disease	Distribution	Prevention	Treatment	Comments
Unclean food & water	Amebic dysentery	Countrywide	Clean food & water	Diodoquin	High incidence
	Helminthiasis	Countrywide	Clean food & water	Tetrachloroethylene	Between 15 and 20 percent of population is infected
Unclean food & water; housefly	Bacillary dysentery	Countrywide; greatest in departments of El Beni & Pando	Clean food & water	Aureomycin or sulfadiazine	
	Typhoid & paratyphoid fevers	Countrywide	Inoculation	Chloromycetin	
Reduviid bug (assassin bug)	Chagas' disease (American trypanosomiasis)	Departments of: El Beni, Potosi, Cochabamba, Chuquisaca, Tarija, & Santa Cruz	Insect repellent & DDT	Essentially none except supportive treatment	Disease usually becomes chronic with low death rate; 20 to 70 percent of population infected in departments listed
Sandfly	Leishmaniasis	Altiplano subregion	Insect repellent	Infiltration of cutaneous ulcers with quinocrine; treatment of visceral form with sodium antimony gluconate	

Source of Disease	Disease	Distribution	Prevention	Treatment	Comments
Infected mosquito	Malaria	Southern two-thirds of the country	Mosquito repellent, primaquine	Chloroquine diphosphate	Two peaks, Mar-Apr & Sep-Oct-Nov; infections include P. vivax, P. falciparum, P. malariae
	Dengue	Departments of El Beni & Santa Cruz	Mosquito repellent	Bed rest & supportive therapy	
	Yellow fever	Jungles of El Beni, La Paz & Santa Cruz below 6,000 ft.	Inoculation, mosquito repellent	Essentially none	New cases have been reported since 1966
Ingestion of food contaminated by urine of infected rodent	Hemorrhagic fever	Department of El Beni	Clean food & water	Bed rest & supportive therapy	
Rat flea	Plague	Departments of Chuquisaca, Santa Cruz, & Tarija	Inoculation	Streptomycin supported by sulfonamides	Only 149 cases recorded in 1965
Infected human body louse	Typhus epidemic	Departments of El Beni, Chuquisaca, Cochabamba, & La Paz	Inoculation, cleanliness	Chlortetracycline or chloromycetin	Less than 200 cases in 1965
Contact with infected animals or dust in areas where infected animals live	Anthrax	Departments of El Beni, Cochabamba, La Paz, Potosi, & Santa Cruz	Avoid breathing dust in infected areas	Penicillin; potassium permanganate on cutaneous lesions	

Source of Disease	Disease	Distribution	Prevention	Treatment	Comments
Bite of infected animal	Rabies	Departments of Oruro & Cochabamba	Avoid wild or domestic animals, especially those that are sluggish and appear sick	Thorough washing of bite wounds; institute rabies vaccine series	Bite victim should be evacuated as soon as possible as the vaccine series cannot be given practically in the field
Contact with infected person or their belongings	Smallpox	Departments of La Paz, Oruro, Potosí, Santa Cruz, & Tarija	Inoculation	Bed rest & supportive treatment	

#### Medical Factors of Importance in Bolivia

Disease reporting in Bolivia is incomplete although the government subscribes to international health agreements. A large portion of the population is inaccessible to health services and many who have access do not report to clinics until their disease is far advanced. This situation tends to blunt the effectiveness of disease eradication campaigns.

The most important medical considerations for small force operations are: personal cleanliness, camp cleanliness; adequate prophylaxis plus competent medical support; and common sense in dealing with natives or native villages where these are known to harbor specific diseases.

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## II. The People

### A. General

Among the independent nations of South America, Bolivia exceeds only Guyana, Paraguay, and Uruguay in size of population, which in 1966 was officially estimated to be 3,748,000\*. Little danger of overpopulation exists in the foreseeable future. Population density is only nine persons per square mile, lowest on the continent except for Surinam, Guyana, and French Guiana, and the annual rate of growth is only 1.4 percent, well below the average for Latin America as a whole.

The 1950 census classified 65 percent of the population as rural and 35 percent as urban. This may have been an unrealistic calculation, however, since the census included as urban all inhabitants of towns with more than 2,000 persons. Thus, the urban statistics probably included many whose way of life was essentially rural. The rural population probably is closer to 75 percent of the whole.

The urban environment is dominated by the city of La Paz, which had an estimated 1965 population of 360,000. Departmental capitals range in size from Cochabamba, with 95,000 inhabitants, to Cobija, an oversized jungle outpost of 3,000 inhabitants. Most urban areas lack adequate electricity, potable water, and sewerage. Santa Cruz, the fastest growing city in the country with a population exceeding 90,000, is only now beginning to pave its streets and is a veritable quagmire during the rainy season (see Figure 69).

The Bolivian population is predominantly Indian. In fact, among the nations of Latin America, Bolivia has the highest percentage of Indians -- approximately 63 percent of its population was so classed in the 1950 census. Quechuas and Aymaras are by far the most numerous of the Indian groupings. Quechuas make up 36 percent of the total population, while the Aymaras comprise another 25 percent. The homeland of the Aymaras is the Altiplano, where they dominate the population of a very bleak region (see Map 58019). Their greatest concentration is in the area around Lago Titicaca, including the Peruvian shores. Some Aymaras also

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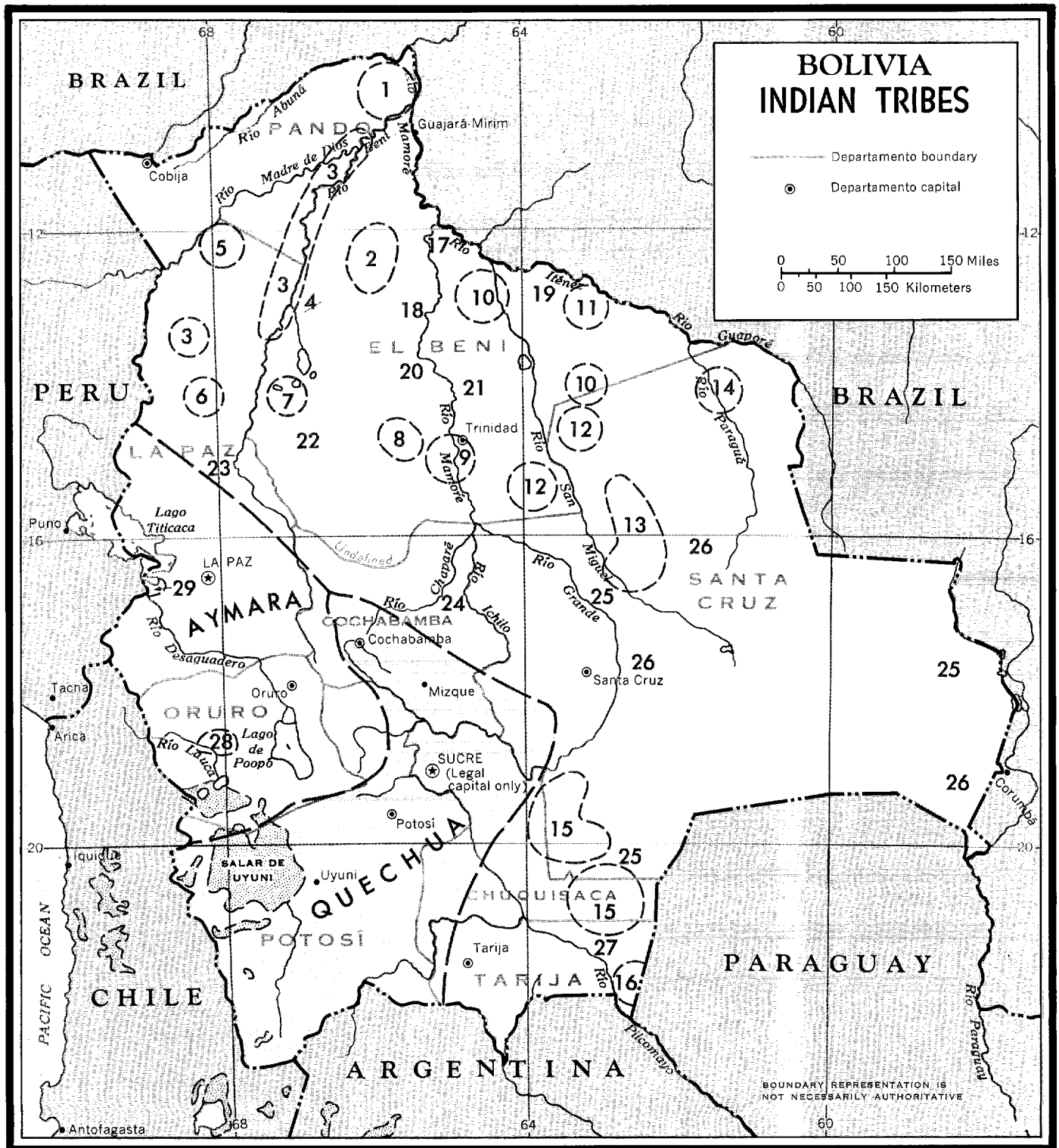
\*Official estimates are based on the last census which was taken in 1950. See Table 1 for the population of Bolivia by Departments.



Table 1  
Area and Population by Departments\*

<u>Department</u>	<u>Population</u>		<u>Density Per Sq. Mile</u>	<u>Percent</u>			
	<u>Area (Sq. Miles)</u>	<u>Total</u>		<u>Indian</u>	<u>Non-Indian</u>	<u>Rural</u>	<u>Urban</u>
Chuquisaca	19,188	313,600	16	72	28	74	26
Cochabamba	21,474	565,600	26	75	25	71	29
E1 Beni	82,436	175,000	2	13	87	67	33
La Paz	51,718	1,214,900	23	67	33	57	43
Oruro	20,685	280,900	14	61	39	55	45
Pando	24,637	25,700	1	2	98	91	9
Potosí	45,532	642,100	14	77	23	77	23
Santa Cruz	143,060	337,500	2	17	83	63	37
Tarija	14,522	146,700	10	40	60	76	24

\* Population totals and densities are from 1965 estimates; percentages are computed from the 1950 census.



58019 1-68

**LOWLAND INDIAN TRIBES**  
 (by Linguistic Families)

**Panoano Family**

1. Pacahuará (probably)
2. Chácobo

**Tacanano Family**

3. Chama
4. Cavineña
5. Toromono (probably)
6. Tacana
7. Reyesano

**Mojoano Family**

8. Ignaciano
9. Trinitario
10. Baure

**Guaraniano Family**

11. Jorá
12. Siriono
13. Guarayo
14. Pauserna
15. Guaraní
16. Tapiete

**Linguistic Family**  
 not identified

17. Moré
18. Cayuvava
19. Itonama
20. Movima
21. Canichana
22. Chimane
23. Leco
24. Yuracaré
25. Ayore
26. Chiquitano
27. Mataco

**HIGHLAND INDIANS**

28. Chipaya
29. Uru

- Aymara  
 □ Quechua

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Figure 69. Street scene in Santa Cruz.

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are located in extreme northern Chile. Quechuas are more widely distributed throughout highland Bolivia, being most numerous in the broad east-facing valleys of the departments of Cochabamba, Chuquisaca, and Potosí. Peru is the homeland of the Quechuas, and they are found in far greater numbers there than in Bolivia. The remainder of the Indian groupings -- about two and one-half percent of the total population -- are composed of small tribes of the Eastern Lowlands.

The distribution of population is very uneven (see Map 58810). The Spaniards found the Indians of the Inca Empire living on the northern part of the Bolivian Altiplano and in the east-facing valleys of the Cordillera Real, and these areas are still the principal centers of settlement. On the farmlands bordering Lago Titicaca and in the broad valleys around Cochabamba, population densities exceed 100 per square mile. Inhospitable climate and rugged terrain continue to discourage settlement in the southern sections of the Altiplano and the upper elevations of the Andes. The Eastern Lowlands, however, comprising nearly three-fifths of the national territory, can support a much denser population.

In recent years there have been both spontaneous and controlled migrations away from the densely settled, often marginal lands of highland Bolivia. One avenue of migration has been from the countryside to the city, with La Paz the goal of most. The town of El Alto, just above La Paz, has grown in a relatively short time to 25,000 persons, mostly Indians living in adobe huts. There also has been a spontaneous movement of Indians into the Yungas, northeast of La Paz; when a road to Caranavi was opened, all available agricultural land was occupied in less than three years. From the crowded Cochabamba valley area thousands have migrated downslope to the subtropical Chaparé region.

Government colonization schemes that originated in the agrarian reform following the 1952 revolution have fostered the movement of Indians from highland Bolivia to agricultural colonies in the east. The Santa Cruz area has been a favored locale for government colonies. In addition to the highland Indians, some immigrants, chiefly Japanese, Okinawans, and German Mennonites, have settled there. Approximately 30,000 Bolivians, for the most part Indians and mestizos from highland areas, enter Argentina annually to participate in the sugar, cotton, and tobacco harvests. About one-third settle there permanently. An estimated half million Bolivians have entered Argentina in this fashion and have remained there.

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## B. Ethnic and Social Groups

### 1. Introduction

The Bolivian census of 1950 divided the population into Indians and non-Indian categories. These categories only partially reflected race; additional criteria included such cultural factors as language and adherence to Indian folkways. Thus, one who principally spoke an Indian dialect or who participated in the life of an Indian community was classed as an Indian in the census. Conversely, a person speaking Spanish and living in a manner that might be considered Western or European was put into the non-Indian category. By these definitions, 63 percent of Bolivians are Indians and 37 percent are non-Indians.

This simplified breakdown, however, does not present an accurate picture of the socio-cultural caste system which exists in Bolivia. The social elite is composed of a minority group that claims a Spanish or European heritage. Many of the so-called whites (blancos) trace their ancestry back to the conquistadors, but because of considerable interbreeding in the colonial era, few truthfully can deny some Indian ancestry. At the other end of the social ladder are the indigenous Indians -- primarily the Aymaras and Quechuas of highland Bolivia, but also the seminomadic forest Indians of lowland Bolivia.

Between these two extremes is a group that usually, although not necessarily, is of mixed ancestry. In highland Bolivia members of this group, who are known as cholos, include mestizos, or persons of mixed Spanish and Indian ancestry. The cholo class is not defined strictly on blood lines, however, and also may include Aymaras or Quechuas who have discarded Indian ways and have learned to speak Spanish. This transformation from Indian to cholo is most common in the larger cities where the Indian is apt to lose contact with his traditional society. In lowland Bolivia the term cholo is not used; rather a variety of local terms are used which apply only to persons of mixed Spanish and Indian ancestry. Thus, when assessed in terms of cultural orientation, the population of Bolivia appears to be 53 percent Indian, 32 percent mixed, and 15 percent white.

### 2. Highland Groups

#### a. Aymaras

There are approximately 930,000 Aymara Indians in Bolivia. Next to the Quechua they comprise the largest segment of the

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Indian population. The Aymara homeland is the Lago Titicaca Basin and the northern Altiplano of Bolivia. In the pre-Columbian era the Aymara expanded westward to the Pacific coast and northward into Peru, but they never effectively settled any of these areas. Subsequently, they were conquered by the expanding Incan Empire and again shortly thereafter by the Spaniards. From that time they have remained, for all intents and purposes, a subjugated race.

The Aymaras are short of stature -- adult males average about 5 feet 3 inches, females about 5 feet. They have large heads, long torsos, and relatively short legs. Their hair is black, and facial hair is sparse or absent. The eyes are black, and the Mongolian fold is common, being more pronounced in females. The most conspicuous facial features are an oversized nose (see Figure 70) and large, fleshy ears. Skin color varies from a coppery brown on the Altiplano to darker and less ruddy shades at lower elevations.

The traditional Aymara costume still is worn, although it has been replaced to some extent in recent years by factory-made garments (see Figure 71). Male garb consists of tight, ankle-length trousers slit at the lower end, a short tight jacket, a poncho, and a knitted wool cap with earflaps that is worn under a homemade flat hat (see Figure 72). Males carry a small woolen bag in which coca leaves are kept. Female garb consists either of a large number of superimposed and differently colored knee-length skirts or one ankle-length skirt, along with a homespun shawl and an embroidered blouse. Felt hats in various styles are worn, including the derby of the chola (see Figure 72). Homespun textiles are made from the wool of sheep, llamas, alpacas, and vicunas, although the weaving craft is dying out with the acceptance of factory-made cloth and clothing. Most adults wear homemade sandals, fabricated from used tire strips or untanned cowhide, while children and some women commonly go barefoot.

Despite their nominal conversion to Catholicism, the Aymaras have retained most of their ancient religious beliefs. Thus, their religion blends Christian and pagan practices.

Aymara social life revolves around numerous religious ceremonies and fiestas in which drinking, dancing, and feasting -- all to excess -- serve as important emotional outlets from an otherwise hardscrabble existence. Aymara dance forms, which vary from locale to locale, are colorful; stories, many relating to the Spanish conquest, are woven into the dances and reveal a keen sense of humor.

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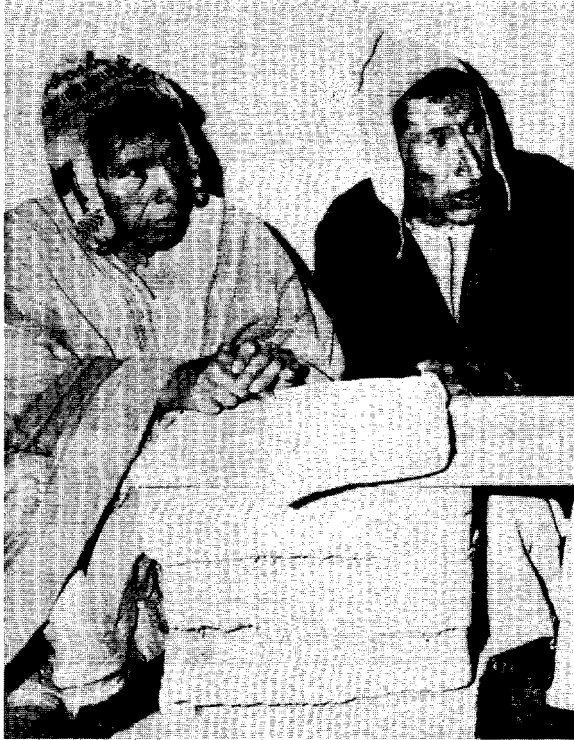


Figure 70. Male Aymara Indians.

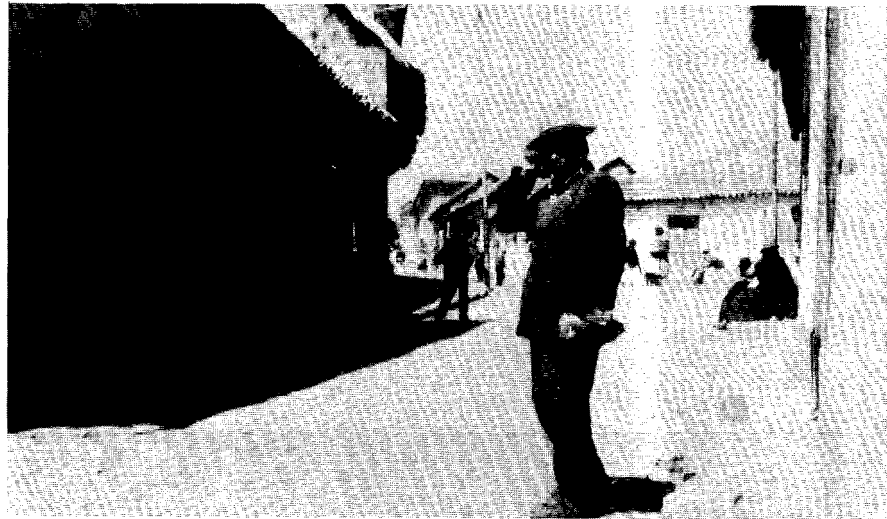


Figure 71. Male Aymara. Only vestige of native costume is wool cap (under felt hat) with ear flaps.

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Colorful weekly markets and annual fairs are an important adjunct to the social and economic life of the Aymaras and are particularly relished by the women as a place to exchange gossip (see Figure 73). Since a cash economy has not developed in Aymara communities to any extent, bartering is common. The ancient method of silent trading, a throwback to times when differing dialects made communication difficult, still survives. Fairs are usually associated with a religious event. The most popular is that of the Virgin of Carmen at Copacabana, which attracts as many as 50,000 persons annually.

The Aymara have been farmers throughout their history, and have developed a deep and abiding attachment to their barren homeland. Their traditional way of life is communal. Numerous small groups are bound together in communes (ayllus) by kinship and common ownership of land. The ruling white class has slowly but relentlessly encroached upon the Indian lands, forming large estates and reducing free Indian holdings to inaccessible and marginal farmlands. As late as the 1920's the President of the country expropriated six ayllus along the shore of Lago Titicaca. Thus, the majority of the Aymaras were forced to live on large estates where they were quite literally the personal property of the owner. They were allotted small plots of land to be used in raising their own crops, but were obligated to spend much of their time laboring in the hacienda fields or in service of the master's home.

Aymara folkways revolve around a complex, male-dominated, socioreligious hierarchy in which achievement is measured by service to the community. Thus, a young Aymara entering adulthood begins his community duties as a cabecilla or dance group leader, moves up through more responsible positions, and eventually becomes eligible for the highest office -- jilikata, or headman. He serves in this post for one year and, at the end of his term, chooses his successor. He then has completed his duties to the community and becomes a parado or ex-officer. By this time, having personally borne all of the expenses required by his various positions, he probably is ruined financially. In fact, the Indian on his rise up the ladder usually goes into debt early and remains so throughout his life.

The Aymara's devotion to his ancestral homeland remains strong, and perhaps it has even been strengthened by his reestablished freeholder status. Government attempts to relieve land pressure on the Altiplano by colonization of the lowlands have not been eminently successful among the Aymaras, although there has been some spontaneous migration



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Figure 72. Aymara religious fiesta.  
Traditional native costume is evident. Some  
males are wearing modern garb.



Figure 73. Indian marketplace on the Altiplano.

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to the Yungas. Aymaras who have taken work in the mines consider mining a short-time occupation, and most look forward to returning to the life of a farmer.

A number of the character traits attributed to the Aymaras cannot be taken at face value. For example, accounts of their stupidity and inability to carry on a conversation reflect more an effort to remain isolated than a lack of intelligence. The Aymara often uses a shield of sullen aloofness against outsiders. When among his fellows he discards this shield, revealing the lighter side of his nature. They also characteristically demonstrate patience and fortitude in the face of considerable adversity.

Since 1952, reform measures have changed the formal structure of society and legally eliminated its attendant caste system. Indians are no longer considered Indians, but campesinos. In informal relations, however, the Aymaras are still at the lower end of the social scale, and their suspicion of the outside remains.

b. Quechuas

Quechuas comprise the largest Indian group in Bolivia -- 36 percent of the total population or approximately 1,350,000 persons. They are dispersed over a wider and more physically varied area than the Aymaras, being found in the Altiplano as well as the broad eastern valleys, in remote rural locales as well as urban environments. They are not a homogenous ethnic group. Many, especially those residing in isolated communities, consider themselves unique. The principal binding tie is the Quechua language that was imposed on several divergent groups of Indians by the Incas. Antagonism between Quechua communities is not uncommon. In 1965 two Quechuan groups in Potosi Department -- the Laimes and the Jucumanais -- formally ended a decade of tribal bloodshed.

In physical appearance the Quechua resembles the Aymara, giving rise to the possibility that they are of the same racial stock (see Figure 74). Traditional Quechua dress, however, is distinct from the Aymara and reflects a degree of regional diversity through variations in color and design. Males wear breeches, leaving the lower half of the leg bare. An open shirt with a sleeveless jacket and poncho completes the attire. Women wear a single skirt, an open shirt or bodice, and a long cloak hanging down in back. The most common headgear for women is a hard, high-crowned, white straw hat (see Figure 75); in some localities the hat is black. Both sexes carry coca leaves in a small woven pouch. The

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Figure 74. Male Quechua Indian.

Figure 75. High-crowned white hat popularized by Quechua women.



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native costume is still worn in isolated Quechua communities. Elsewhere, particularly in the Cochabamba Valley, factory-made clothes have been worn for many years, especially by males.

The Roman Catholicism of the Quechuas blends Christianity and paganism, though to a lesser degree than among the Aymaras. The spiritual world of the Quechuas is less complex, and communal religious observances with their attendant hierarchy are lacking. Traditional dances and music played on aboriginal instruments, considered much less colorful than those of the Aymaras, survive only in remote Quechua communities. Much of the Quechua music now heard throughout the Cochabamba Valley comes from the tin pan alleys of La Paz. Weekly markets remain an important feature of Quechua life (see Figure 76), but the shops and stores of the larger towns are of growing significance as the desire for modern industrial products increases.

Patterns of land tenure in the Quechua areas differ considerably from those of the northern Altiplano. Large haciendas with their exploitive and suppressive tendencies are less common; a dense pattern of small farms is more characteristic of the eastern valleys. Here, contacts between the Indians and the whites and cholos are more frequent and friendly. In fact many cholos are small subsistence farmers whose level of living is no higher than that of the Indian. Intermarriage between Indians and cholos on the same level is not uncommon. This liaison with non-Indian elements has made it relatively easy for the Quechuas to adapt to social changes, to seek educational opportunities, and to participate in the national life. They have responded more readily than the Aymaras to colonization attempts, and many thousands have migrated to new lands in the Chaparé region. Quechuas have proven far more adaptable than Aymaras to the changes produced by the 1952 revolution. In fact, the syndicatos, or rural labor unions, which have been the most successful agitators in effecting the agrarian reform act, began in the Cochabamba Valley among both Quechua and cholo farmers. There still remain, however, many thousands of Quechuas -- including many who worked as serfs on large haciendas prior to agrarian reform and many others who still live in isolated communities -- who exhibit the same self-repressive, sullen, backward attributes that characterize the Aymaras.

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c. Minor Indian Groups

(1) Urus and Chipayas

Within the Aymara area live the remnants of two Indian tribes with distinctive language and ethnic identities. The Urus live along the banks of the Río Desaguadero and the nearby shores of Lago Titicaca, having lost their tribal lands to the Aymara. Some actually dwell on reed rafts on the lake itself. Intermarriage with Aymaras has reduced their numbers, and the last pure-blooded Uru was reported to have died in 1962. The remaining mixed bloods, though few in number, still retain vestiges of Uru culture and live apart from the Aymara community.

The second tribal group, the Chipayas of the Carangas district in Oruro Department, inhabit the driest and least hospitable part of the Altiplano, growing some crops, herding llamas, and bartering cheese to the Aymaras for potatoes and quinoa. Many have learned to speak Aymara and use it in preference to their own tongue. Intermarriage with neighbors is increasing while adherence to their own culture suffers. Perhaps there are no more than 300 Chipayas today, and they seem destined to a fate similar to that of the Urus.

(2) Callahuayas

The Callahuayas of the province of Saavedra in northern La Paz Department are a distinct group among Bolivian Indians. Purportedly a subtribe of the Aymaras, they consider themselves a separate ethnic group. Certainly their way of life and their achievements place them apart from the average Aymara, if their race does not. The Callahuayas are the famous traveling doctors of the Andes, wandering from Colombia to Argentina to dispense a multitude of herbs and charms. Through the centuries they have acquired a knowledge of the many herbs and medicinal plants that grow in the Andes, and their secrets remain closely guarded within the group. Their once distinctive costume has been replaced by a European style of dress. All that remains is the chuspa, or large, finely woven shoulder bag in which herbal medicines and charms of stone or silver are carried. In their journeys the male Callahuayas travel in groups of eight to ten, while their women remain at home. Their itineraries may last up to a year or more. Formerly the range of these groups was much greater than it is today. Barriers to international travel -- passports, visas, and identification cards -- now make it bothersome, expensive, and increasingly difficult to travel outside Bolivia.

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d. Cholos

The census of 1950 and Bolivian statistical data since that time have not recognized the cholo class. By unofficial estimates, however, cholos comprised about 32 percent of the total population or approximately 1,200,000 persons in 1966. The most widespread of Bolivian ethnic and social groups, they are found in relatively large numbers in all departments of highland Bolivia, in urban as well as rural areas.

Cholos are primarily the products of intermarriage between whites and Indians during colonial times. The term cholo, however, also connotes a way of life. Many Indians, either through necessity or desire, have discarded their own ways for those of the cholo and are so identified. Due to the loose definition of the group, there can be no composite physical description of the cholo. It appears, however, that in cases of intermarriage Indian characteristics tend to dominate up to the third or the fifth generation (see Figure 77).

Cholo males have adopted a modified Western style of dress. The cholas (female) are not as susceptible to change and their dress, for the most part, still is traditional. It shows regional variations, on the Altiplano consisting of several brightly colored knee-length skirts, a colorful blouse, and a bowler-shaped felt hat (see Figure 78). In the eastern valleys the skirts are longer and the hat is straw, with a wide brim and a stovepipe crown, all painted a gleaming white enamel.

Female conservatism is evident in fields other than dress. Although cholos are bilingual, speaking both Spanish and either Quechua or Aymara, the native language is preserved and preferred by women, even in urban areas where Spanish is dominant. Adaptions of the Indian folk religion, magic, and curing techniques that are a part of the cholo background are perpetuated mostly by women. This is particularly true in rural areas where the ancient gods still are venerated to some extent. Cholo ceremonies are celebrated only on a family basis, as with the Quechua, and they lack the formal ritualism of the Aymara. In urban areas many of these traditions have no practical application and tend to lose their significance. Many urban cholos, however, still rely on folk medicines and charms, most of which can be bought in the markets of all large cities. In both urban and rural areas, cholos celebrate the major religious events of the year with as much fervor as the Indians.

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Figure 76. Indian market in Cochabamba area. High-crowned white hat is favored by women in this area.



Figure 77. Cholo family in an Altiplano mining community.

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Figure 78. Cholo wedding procession in La Paz. Note modern garb of men and traditional costume of women.



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The urban cholo usually works in a factory, in a service industry, or is self-employed as an artisan or shopkeeper. Many rural cholos are subsistence farmers, especially in the Cochabamba Basin where they live side by side with Quechuas. Many also are engaged in various trades serving rural areas, and prior to 1952 it was the bilingual cholo who was employed as administrator or overseer of the large haciendas.

A small, urban-oriented middle class composed of merchants, white-collar workers, and professionals has recently developed in Bolivia. Although persons in this class do not conform to any specific social or cultural definitions, most are from a cholo background. The principal exceptions to this are certain immigrant groups who lack proper credentials for inclusion in the upper class. They are set apart from lower class urban cholos by occupation, a higher level of education, and better living conditions. Salaries in this group are meager, however, and barely suffice to sustain living standards above the cholo and Indian classes.

Cholos, especially those in urban areas, enjoy a degree of social mobility. Those who have attained a measure of economic success can marry white persons. The children or grandchildren of such unions usually will be accepted as white, although the fact that they come from cholo stock is not forgotten for two or three generations. Patience and a lack of ostentation are necessary prerequisites for the cholo who wishes to move up. Wealth alone is insufficient -- tin magnate Simon Patiño, the wealthiest Bolivian of the prerevolutionary era, was never accepted by the elite. In the belief that cholos were social climbers bent on usurping white dominance, the elite promulgated the concept of the cholo stereotype as a halfbreed retaining only the worst traits of both ancestors.

e. White or Upper Class

About 15 percent of the total population is considered to be white. In the strictest sense, the Bolivian upper class is composed of a small, elite group of families who claim Spanish, or in some cases, European descent. Proper lineage is vitally important, but inasmuch as intermarriage between Spaniards and Indian women was common in the colonial era, the existence of some Indian blood is not a detriment. This explains, in part, the acceptance of cholos who marry into the white class. Nevertheless, Caucasian features and a strong Hispanic background are accorded the highest values (see Figures 79 and 80).

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Figure 79. White aristocracy dominates the military hierarchy.

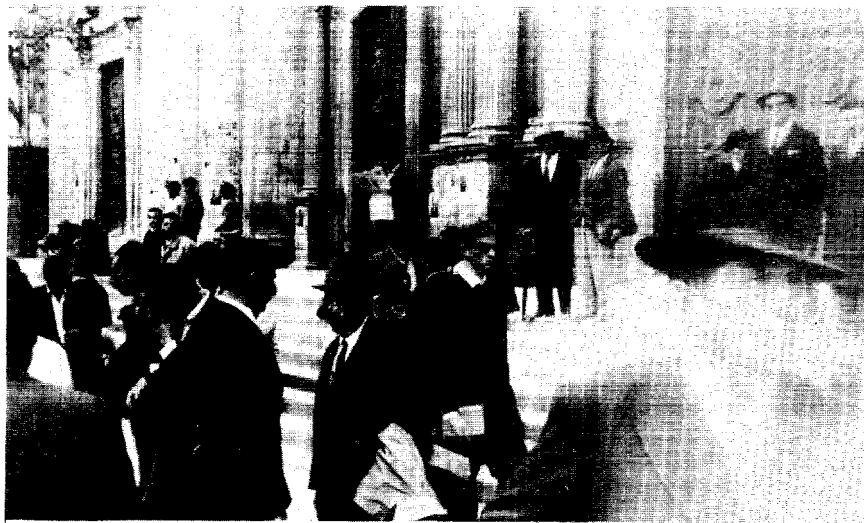


Figure 80. Street scene in La Paz. Many persons have strongly Caucasian features.

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The Bolivian elite, also referred to as La Rosca, is urban oriented. Palatial homes are maintained in La Paz, Cochabamba, and other large cities of the highlands. Foreign residences also are maintained, and fluency in French, German, and English is not uncommon. Although scholastic achievement is not rated highly, it is considered a mark of achievement to send one's children to private schools in Europe or North America.

Throughout most of Bolivian history the elite held a virtual monopoly on the wealth, the land, and national political power. The 1952 revolution, however, stripped them of their leadership, and the subsequent agrarian reform appropriated most of their extensive landholdings. Those who kept their wealth in foreign banks and enterprises have been able to retain their level of living. Others simply emigrated, to live in opulence abroad. Some have attempted to cultivate cordial relations with individuals in the new government. Their effective power has been sharply eroded, however, and their influence is but a fraction of what it once was.

3. Lowland Groups

a. Mestizos

The dominant racial group in the sparsely populated lowlands of eastern Bolivia are a mestizo people. Because of the physical isolation of the area from highland Bolivia, a different culture has developed. There never has been any fusion between the cholo, or highland mestizo, and the lowland mestizo. Natives of the Santa Cruz area consider the Bolivian highlanders, whom they call kollas, inferior and resent their presence when they migrate to the lowlands.

In the densely settled areas of Santa Cruz, mestizos are known as cambas. The physical characteristics of both Indian and Spanish blood are evident, but the Spanish culture is dominant (see Figures 81 through 84). The language is Spanish, religion is an orthodox Roman Catholicism, and dress is Western in style. Little remains of anything aboriginal. Mestizos in other lowland areas probably are similar in racial and cultural attributes, although they have different names. For example, in the southeast the chapacos, who are a blend of the Spaniards and the Tomatas Indians, are the dominant rural element; mestizos in the Chaparé region are commonly called yuras.

The majority of lowland mestizos are subsistence farmers, tenant farm laborers, or squatters. Land always has been

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Figure 81. Mestizo girls in the Beni area.



Figure 82. Mestizo children of Riberalta. Note variations in the dominance of Spanish and Indian ancestry.

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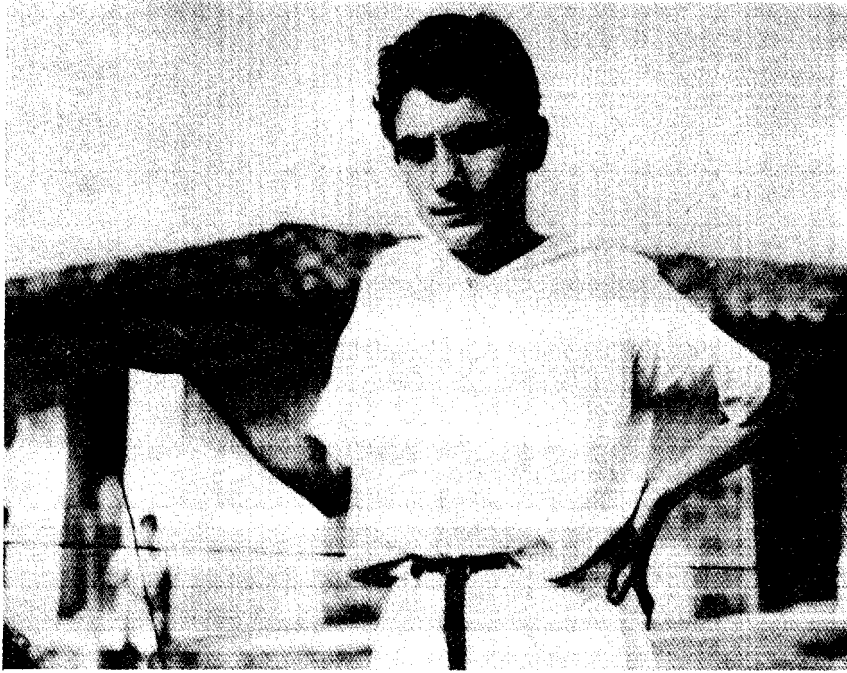


Figure 83. Mestizo boy of Santa Cruz region.  
Note dominant Caucasian features.



Figure 84. Mestizo boy of Santa Cruz region.  
Note dominant Indian features.

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plentiful and, if one so desired, he could become a freeholder. People in the lowlands lead a leisurely life, perhaps in tune with the climate. It is relatively easy to grow enough food for one's family, and limited markets provide no stimulus to overproduce. The growth of colonies in the Santa Cruz area has not yet affected this traditional way of life.

b. Indians

The exact number of Indians in the Eastern Lowlands, in 1950 estimated at 87,000, is not known. They are a vanishing race, however, and are widely dispersed, living in or near settlements as well as existing as forest nomads. Many of the 27 individual tribal groupings contain less than 1,000 persons. The Sirionos, probably the most numerous, are approximately 8,000 strong.

The typical Indian of the lowlands ranges in height from 5 feet to 5 feet 4 inches and has dark features. In some there is a distinct Mongoloid tendency (see Figures 85 and 86). In the forest habitat their clothing is minimal. Upon absorption into more civilized groups, they adopt the local dress -- usually shirt and pants for men and a long cotton dress for women. Feet are bare (see Figures 87 and 88).

Contact between lowland and highland Indians may have existed at one time, but in general, topographic barriers prevented any extensive intermingling. In the colonial era contacts between forest Indians and Spaniards were apparently more frequent than today. Jesuit missionaries made extensive inroads into the Eastern Lowlands in the 17th century, converting many of the natives and bringing them into missions. With the expulsion of the Jesuits in 1767, many Indians fled back to the forest, forgetting Christianity and resuming a nomadic life. For many this was their only means of protection. Without the Jesuits they fell prey to the exploitation of colonists and adventurers. The rubber and quinine booms of the last 100 years brought in groups of immigrants seeking a quick profit. In many cases they enslaved the Indians and forced them to work under brutal conditions. Faced with abusive treatment and ravaged by new diseases, their numbers dwindled.

Those who by force or choice move into settlements or are absorbed by the advance of the frontier retain little of their aboriginal culture. A few small groups remain under the protection of Catholic missions. The Summer Institute of Linguistics, operating from a base near Riberalta, provides medical assistance and limited education to a number of tribes and devises alphabets for the tribal languages.

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Figure 85. Chacobo Indians of Beni area.

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Figure 86. Chacobo Indian family group.

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Figure 87. Movima Indians who have adopted Western dress.

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Figure 88. Movima Indians who have adopted Western dress.

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A number of Indians still live completely outside the national life, leading a nomadic existence deep in the forests. Isolated cases of exploitation and even slavery still can be found. When faced with the encroachment of civilization, the Indians either retreat deeper into the forest or adjust to the new life. The Yuracare Indians of the Chaparé region exemplify the latter. Here spontaneous settlement from the Cochabamba area is taking place, and in response to this the Yuracare have developed a degree of fluency in Spanish, have accepted employment on riverboats and ranches, and sell some fruits and vegetables to passing boats. They do not maintain permanent homes, however, reflecting the strong nomadic tendency in their background.

c. White or Upper Class

The elite of lowland Bolivia are proportionally much smaller in number than their counterpart in the highlands. It is probable that this group is of purer Caucasian stock since there was less intermarriage here than in the highlands. The lowland elite have had little contact with the rest of Bolivia and the outside world, and they have maintained friendly relations with lower classes in the area. Wealth is not considered important since there is not much to spend money on; similarly the control of land is less attractive when land is so plentiful. The ability to command a large labor force, however, is an important indicator of power. Because of the abundance of land and the lack of friction between peasant and master, agrarian reform has not made extensive inroads into lowland Bolivia where large haciendas remain.

C. Education

The illiteracy rate in 1950 was nearly 70 percent. In 1952 the revolutionary government had the improvement of education as one of its more important objectives. A number of government agencies were formed to implement educational policies and the Code of Education was enacted in 1955. Literacy courses were started in factories and other places of employment. Official estimates indicate that the illiteracy rate today remains close to 70 percent indicating that efforts of the past decade are just about keeping pace with the rate of population growth.

There are many reasons for this lack of progress. Public education cannot be significantly improved as long as both economic and political instability characterize the country. Funds are often unavailable to provide adequate

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supplies of textbooks, pencils, and notebooks. Many schools lack benches or desks (see Figures 89 and 90). Rural areas, where the bulk of the populace resides and where illiteracy rates are highest, suffer the most. Many rural communities are so scattered and small that it is impractical to provide teachers and schools. Many children have learned only Aymara or Quechua at home; consequently, they first must learn Spanish. Conversely, the teacher should be bilingual.

Although there is some degree of public apathy toward education among the rural poor, there is no dearth of students when facilities are available. Many rural families send their children to live with relatives or friends in town simply to attend school, further overcrowding the limited urban facilities. Rural communities usually respond quickly to Government appeals for self-help in school construction. The Bolivian Indian appears more receptive to education, especially that which imparts vocational skills, than his counterpart in other Latin American countries. The desire for schooling is strong among cholos for they realize that an education is a practical means of improving their economic and social status. Though barely literate themselves, cholo parents attempt to provide as much education for their children as possible.

Privately sponsored schools, especially those run by the Roman Catholic Church, are an important complement to the public school system. In the early 1960's approximately 20 percent of the entire student population was enrolled in parochial schools. The Roman Catholic Church has been especially prominent in promoting literacy. Maryknoll fathers reach a considerable number of Indians by radio with Spanish literacy classes from La Paz in Aymara and from Cochabamba in Quechua.

Secondary education, consisting of both academic and vocational schools, is as yet of little importance in Bolivia. Enrollment requires at least four years of primary education, and few Bolivians attain this level. Most vocational schools, including teacher training schools, are operated by the Government, while more than half of the academic schools are private. Secondary schools usually are located only in the larger towns and cities.

There are seven universities in Bolivia (one in each of the departmental capitals except Trinidad and Cobija) but only a minute proportion of the population is able to gain university training. Standards are generally low. Most professors and students must work full time at other jobs.

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Figure 89. Outdoor classroom in Cochabamba area.



Figure 90. Outdoor classroom on the Altiplano.

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Thus, classes are concentrated in the early morning and late afternoon and evening hours, and there is little time for homework.

#### D. Religion

More than 90 percent of the population is Roman Catholic. Minority groups include relatively small numbers of Protestants, Jews, assorted eastern faiths, and nomadic tribes of the lowlands practicing a primitive animism. The Bolivian Government recognizes Roman Catholicism as the state religion, although it does not prohibit other faiths. The Catholic Church receives financial assistance from the state, and religious education is a part of the public school curriculums although non-Catholics are not compelled to attend.

Despite the apparent dominance of the Catholic Church, its influence on communicants is weakened by the small size of its clerical force. The number of parishes and of priests has failed to keep pace with the growth of the population. The high ratio of dropouts at the country's four seminaries indicates a lack of interest among Bolivians in a religious career. The void has been partially filled by various religious orders, notably the Franciscans, Maryknollers, Jesuits, and Redemptorists. Although much of their activity is directed toward education and charitable works, many also are active in parish work in rural areas, often taking the place of the regularly assigned priest who may not appear in the area more than a few times a year. Most of these religious orders are composed of non-Bolivians, with Spaniards, North Americans, and Italians the most numerous foreign groups.

The practice of Catholicism in Bolivia varies among social and ethnic classes. The white elite considers religion to be the sphere of women. The Latin ideal of masculinity does not include religious devotions, and strict adherence to religious practices is discouraged among boys once they reach adolescence. Ceremonial observances are honored, but the depth of religiosity beyond these outward manifestations is not considered great.

The Indian was never completely converted to Catholicism. Although Catholicism was accepted, preconquest pagan beliefs were retained. The Catholic Church tends to ignore a wide range of secular behavior providing certain religious forms are recognized. Thus, the Indian remains a deeply superstitious person, fully believing in the supernatural, utilizing charms and fetishes, and consulting witch doctors and diviners rather than the clergy. The Indian looks upon Catholic

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rites and celebrations primarily as social outlets. Fiestas, held on the numerous saints' days, frequently become little more than drinking sprees.

Pagan beliefs involve a wide variety of spirits that affect nearly every aspect of daily life. Though common to all Indians, they are strongest among the Aymara. Spirits are believed to reside in physical locations such as mountains, rivers, and caves. An Indian, upon approaching such a spot, will uncover and bow his head, kneel, and offer a few coca leaves. Whirling dust caused by the wind is believed to indicate the presence of a spirit. A witnessing Indian will fall on his knees and pray for protection. One cannot travel long in highland Bolivia without viewing a ceremony in honor of the best known of the spirits -- Pachamama, or mother earth, a goddess often confused with the Virgin Mary. Veneration of her is especially important during planting and harvesting in order to insure a good crop. A special day for honoring Pachamama is set aside each year, usually during Holy Week. The famous Indian god Ekkako, meaning good fortune, also has survived. The Catholic Church initially tried to eliminate the worship of Ekkako, but having failed, accepted the cult to the extent of setting aside a special day (24 January) for worship of this spirit. It has now become one of the more popular holidays of the year among all highland Bolivians. The Carnival, preceding Lent, however, is the biggest of the annual fiestas, bringing forth the most expensive costumes and perhaps the highest consumption of liquor.

The Catholicism of the cholo is not easily defined. In theory, to be considered a cholo one must have divested himself of Indian ways, including pagan beliefs. In practice, however, especially in rural areas, cholos frequently utilize the services of a magician, diviner, or curer, and may even present offerings to Pachamama. The cholo also may reject overtly all Indian beliefs simply to gain social acceptance, but secretly retain his belief in certain spirits.

Protestant missionary activity began in Bolivia in the late 1880's. Since then a number of denominations, including fundamentalist groups, have been active. The Seventh Day Adventists, who have concentrated their efforts among Indians in the Lago Titicaca region, are today the largest Protestant denomination. The other two most active denominations are the Methodists and the Canadian Baptists. Rates of conversion are not impressive -- the Protestant community in 1962 was barely one percent of the population. Since prestige is lost by such a change in a predominantly Catholic

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community, those converted usually hold firm convictions and seldom revert. Religious freedom has been officially proclaimed since 1906, but there remains a degree of friction between the established Church and Protestant elements.

E. Living Conditions

1. Housing

Substandard housing is the rule in rural areas throughout Bolivia. Dwellings are small, overcrowded, and without the most basic essentials. Construction materials reflect the physical resources of the particular area. Adobe -- a sun-dried brick composed of straw, sticks, and mud -- is most common. On the Altiplano, roofs are of straw or, in the vicinity of Lago Titicaca, of totora weed (see Figure 91). In the lowlands palm or bamboo wood is as basic a building material as adobe; roofs are of palm leaves (see Figures 92, 93, and 94). Floors of packed earth and a lack of windows and toilet facilities are country-wide characteristics.

Rural homes serve mainly as dormitories and storage areas. Cooking facilities, using dry dung, cornstalks, llareta, or wood for fuel, are in a shed or lean-to apart from the house (see Figure 95). In the highlands most domestic duties are carried on outdoors against a sun-facing wall rather than in the cold, cramped, dark quarters of the hut. One can travel across the Altiplano on a winter's morning and see Indian families emerge from their unheated huts to warm themselves in the sun.

Beds are unknown throughout most of rural Bolivia. The Altiplano Indian sleeps on a hard mud platform, completely clothed, covered by a sheep pelt or a homespun, ruglike piece of wool. In the lowlands, woven straw mats are spread out on the floor and hammocks also are employed. Outdoor sleeping is not uncommon. Screens are not used because it is believed they limit the circulation of air.

Water, whether for drinking, cooking, or washing, is obtained from natural sources (see Figure 96). Since these sources also are used for sewage disposal, pollution is widespread. In the lowlands, pauros -- tanks excavated in the ground and filled with water during the rainy season -- provide a reservoir for stagnant and polluted water.

In the restricted suburbs of La Paz and Cochabamba the Bolivian upper class and resident foreigners enjoy living conditions that approach middle class American standards.



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Figure 91. Thatch-roofed, adobe Indian dwelling on the Altiplano.



Figure 92. Thatch-roofed, adobe mestizo dwelling in Santa Cruz area.

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Figure 93. Thatch-roofed wooden dwelling in Chaparé area.



Figure 94. Thatch-roofed hut in Santa Cruz area.

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Figure 95. Separate kitchen. Santa Cruz area.



Figure 96. Outdoor laundry  
on the Río Caranavi.

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Elsewhere, substandard housing characterizes all of Bolivia's large towns, cities, and mining communities. Multiple-unit dwellings, usually two-story buildings and sometimes made over from large single homes, are common. Families occupy one room that opens in the back onto an enclosed patio. If there is piped water, it will consist of one spigot in the patio that is used by all families (see Figure 97). Latrines, if available, are also in the patio. Although there are some modern apartment buildings in La Paz and Cochabamba, adequate housing for middle class technical and semiprofessional workers is scarce. Slums and squatter settlements, the homes of impoverished urban dwellers and rural migrants seeking employment, fester on the fringes of all the cities and towns. The latter usually find themselves living in squalor far worse than they left behind in the country (see Figure 98).

Mining communities, though uniformly drab, provide a somewhat better environment. These usually are company-built towns with barrackslike rows of adobe or concrete dwellings separated into one- and two-room apartments (see Figure 99). They normally are rent free to the miners, and have some lighting and ventilation along with primitive water and sanitation facilities.

Despite the cold of the Altiplano, indoor heating of any kind is as unknown in the cities of Bolivia as in the hut of the poorest campesino. One reason is the scarcity of fuel, but there is also a widespread belief that bronchial difficulties will result if one sits in a heated room. It is not uncommon for Bolivians to spend many indoor hours wearing heavy sweaters and outercoats.

## 2. Health and Sanitation

Health and sanitation conditions in Bolivia are among the worst in the Western Hemisphere. Efforts by governmental agencies, assisted by United States and United Nations aid programs, to improve health conditions are often lost on a populace that is ignorant of even the most elemental rules of hygiene. The physical environment serves to intensify the health problem -- high altitudes and chill temperatures of the Altiplano engender respiratory disorders, while the warm, humid lowlands breed a variety of disease-carrying pests and intestinal parasites. Mortality rates (at least 20 per 1,000) and infant mortality rates (300 to 400 per 1,000) are high, and the average life expectancy is only 44 to 45 years.

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Figure 97. Single water tap supplying all residents of a city block in town of Pulacayo.



Figure 98. One of many Indian slums of La Paz.

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Figure 99. Worker's housing at Catayi Tin Mine.

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Although the ratio of physicians to the population in the larger cities is low (9.7 per 10,000), it far exceeds the deplorable rural ratio (1.8 per 10,000). Fully 80 percent of Bolivian doctors live in the larger urban areas. Hospitals and clinics are grossly inadequate and also are concentrated in urban areas.

The highland Indian is noted for his physical endurance, particularly his ability to travel long distances afoot with little sustenance. Despite this physical vigor, malnutrition lowers his resistance to the variety of ailments that constantly threaten him. Caloric intake, even for individuals performing hard physical labor, generally averages under 2,000 calories a day. Starchy foods make up the bulk of the diet and enormous quantities of potatoes are consumed on the Altiplano where the harsh climate and meager soil will support little else. Even in the verdant lands of the eastern valleys and the lowlands, however, few vegetables are grown, and high starch foods such as yuca, rice, and bananas are favored. Improvements that might result from an adequate diet are indicated in the records of Bolivian army conscripts, most of whom are Indians. Conscripts add an average of 2 inches to their height and 25 pounds to their weight during their time in service.

Working conditions and practices among the lower classes contribute to further health problems. The Indian custom of carrying heavy loads over long distances, begun in childhood, produces bad posture, round shoulders, and flat chests. Additional bodily strains are placed on women who toil for long hours in the fields in a stooped position and on miners who work with pick and shovel in cramped quarters (see Figures 100 and 101). Miners also are prone to silicosis from the inhalation of dust-laden air.

Ignorance of and disregard for personal hygiene are major contributing factors in the spread of disease, especially respiratory and alimentary infections. The lack of personal cleanliness among the highland Indians is difficult to imagine. Face and hands are rarely washed and baths are never taken. There is, of course, little inducement for bathing in melted snow in the cold and raw Altiplano. Bathing is more common in the warmer climate of the Yungas and lowlands. The highland Indian wears the same clothes day and night, never changing garments until they literally fall off. Lice, fleas, and other body pests are common. Because of inadequate or nonexistent sewage facilities and the drinking of polluted water, few people are free of worms.

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Figure 100. Primitive mining practices.



Figure 101. Primitive mining practices.

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The belief persists that residents of the Altiplano, especially Indians, cannot adapt to life in the tropical lowlands. Successful colonization by Altiplano Indians at lower elevations, however, belies the claim that long residence in the thin air of high altitudes makes one physically unable to live at or near sea level. The Indian's past dislike of the lowlands was due largely to the various tropical diseases of which he had no knowledge and little resistance. If adequate protection is provided against yellow fever, malaria, bubonic plague, typhoid, typhus, and Chagas' disease -- all present in tropical Bolivia -- and adequate time is allowed for adaptation to changes in clothing, diet, and climate, there is no physical reason why the Altiplano Indian cannot live in the lowlands.

The chewing of coca leaves, a widespread habit among the highland Indians and fairly common among the cholos, is rarely practiced in the lowlands. The habit, contracted early in life, is common to both sexes. The traditional view is that without coca the Indian could not survive the rigors of his daily life. Others maintain that coca has a deleterious effect, dulling the Indian's senses and lowering his resistance to sickness.

In the absence of modern medical practices and facilities, folk beliefs are common, especially among the highland Indians who have a host of primitive curative measures. Even in the markets of cosmopolitan La Paz, dried llama fetuses and other items for medicinal uses can be purchased. While some of these practices appear bizarre, modern science recognizes the value of certain Andean herbs. Such well-known drugs as quinine and ipecac originally were used by the Bolivian Indian. The most famous of the Bolivian herbalists are the Callahuayas, traveling medicine men who wander the length of the Andes, dispensing their curative powers. No fair or market in Bolivia is complete without the Callahuaya with his numerous wares spread out before him.

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### III. The Economy

#### A. General

By almost any statistical measure, Bolivia is one of the poorest and most backward countries in Latin America. Per capita GDP (Gross Domestic Product) amounted to only \$230 in 1967 -- second only to Haiti in Latin America and lowest in South America. More than 60 percent of its population is illiterate, and most of the rural population participate only marginally in the money economy. The country's poverty and shortage of employment opportunities have prompted large scale emigration to Argentina during the past 20 years.

Although most of its land is too high, dry, rugged, or inaccessible for easy farming, Bolivia otherwise has a favorable natural resource endowment. The country has extensive forests, substantial mineral resources, a large hydroelectric potential, and significant deposits of petroleum and natural gas. Bolivia is the largest producer of tin in the Western Hemisphere and also produces important amounts of other minerals, but a large portion of its resources remain untapped. Bolivia's difficulties in developing its natural potential reflect not only the rugged and inhospitable terrain and the isolation of some regions but also an inadequate transportation system, a history of inept government and revolutionary disturbances, insufficient capital resources, a severe shortage of managerial and technical skills, and the small size of the domestic market.

In the first years after the Revolution of 1952, the economy suffered from both rampant inflation and declining production under the misguided policies of the new government. A harsh economic stabilization program brought inflation under control in 1957 and helped to create conditions for Bolivian exports improved. At present, monetary stability is one of Bolivia's greatest economic strengths.

During 1961-67, the economy grew at an average rate of more than 5 percent annually, and by 1965 per capita GDP had regained its pre-revolutionary level. The principal factors underlying this growth were rising levels of foreign trade and increased investment both by private firms and by the public sector -- the latter supported by improved fiscal performance

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and by inflows of foreign aid. In 1967, a satisfactory rate of growth was maintained because of a surge in petroleum production -- the result of large investments by Gulf Oil. In 1968, in spite of increased public investment, the growth rate declined to 4.5 percent as petroleum production leveled off and prices for Bolivia's other exports continued to decline.

The Bolivian economy is generally dependent on imports for all but the most elementary consumer durables, and imports also supply all of its capital equipment. Despite considerable success in boosting exports, the expansion of imports has given rise to deficits on the current account in most recent years. Moreover, continued heavy dependence on exports of tin has subjected the economy to severe fluctuations in export earnings as world demand for the metal has changed.

Bolivia faces serious problems in maintaining a reasonably high rate of economic growth. Prices for Bolivia's exports have declined from the high levels of 1965 and 1966 and are expected to decline further. Long term economic growth will require agricultural improvement, further expansion and diversification of exports, and the development of the transportation system. The nation's most important need is adequate capital to develop resources. This capital must come from foreign sources because domestic savings, though increasing, are clearly inadequate. Bolivia's future development, therefore, will be determined largely by its ability to attract sufficient quantities of private foreign capital and by the availability of concessionary financing from the US government and international financial organizations.

#### 1. Economic Power and Control

The Bolivian government exercises a degree of control over the economy that is above average in Latin America. Government ownership of economic enterprises is widespread and extends into all nonagricultural sectors. Government-owned economic enterprises usually account for about 20 percent of GDP. Control also is exercised through government direction of the distribution and marketing of petroleum and a few basic consumer goods, price support programs for some crops, fiscal and monetary policies.

The five principal economic enterprises of the Central government are as follows: The Bolivian Mining Corp. (COMIBOL), The Bolivian State Petroleum Co. (YPFB), the National Railroad

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Enterprise (ENF), the national airline (Lloyd Aereo Boliviano-LAB), and the Bolivian Development Corporation (CFB). Of these, by far the most important is COMIBOL (see Section 4 below). The government also has established monopolies to sell alcohol, matches, and salt. Since 1962, the establishment of public-owned plants for the production of sulfuric acid, cement, sugar, and milk and the provision of equity capital for numerous private enterprises have extended government ownership to a significant share of manufacturing. Selective guidance of private sector production has been provided by protective tariffs for domestic manufactures and government supported marketing cooperatives for rice and for wool and hair products.

Since 1960, the government has engaged in developmental planning. It devised a 10-year plan for 1962-71 and 2-year plans for 1963-64 and 1965-66 as guides to economic expansion. These plans, however, proved too vague and unrealistic to provide an adequate basis for establishing investment priorities or for obtaining foreign aid. In 1966, they were replaced by a series of plans for specific public investment projects, chiefly in transportation, electric power, and agriculture.

After the Revolution of 1952, the economic power of the once powerful large landowners and mine-owners was almost completely eliminated. Although a considerable part of Bolivia's mineral production remains in private hands, private mines tend to be small. The most important private company in the nation is the US-owned Bolivian Gulf Oil Company (see Section 4 below) which became the country's largest petroleum producer in 1967.

## 2. Employment and Labor

The labor force -- defined in Bolivia as the economically active population of age 10 and older -- was estimated in mid-1965 at 1,851,000, or somewhat less than half the total population. Females constitute about 43 percent of this group. Almost 70 percent of the labor force is employed in agriculture, forestry or fishing; mining employs slightly more than 3 percent, manufacturing 8 percent, commerce and services a little more than 15 percent.

Labor productivity is low in almost every branch of the Bolivian economy and is possibly the lowest in South America. Bolivia has few vocational schools, and those that exist produce a very limited number of graduates. Only a minority of the labor force is literate and only about 5 percent have advanced technical or professional skills. Some improvements

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in productivity, especially in petroleum, construction, and medium-scale agriculture, have been made since 1965.

Although overt unemployment is low (estimated at about 4 percent in 1963), underemployment is endemic, especially in seasonal and subsistence agriculture. When adjustments are made for these factors, total unemployment may range as high as 17 percent. The problem is exacerbated by the concentration of the population in the highlands, where opportunities for increased employment are limited. At the same time, a labor shortage exists in the underpopulated agricultural areas of the eastern plains. In the manufacturing sector, estimates during the early 1960's indicated that the average industrial plant was overstaffed by 10 percent and some by as much as 90 percent.

Almost all aspects of employment conditions are regulated by the Labor Law of 1942, and its amendments, supplemented by some more recent legislation. The code contains provisions governing the form and content of individual and collective contracts; special requirements for the employment of women, minors, apprentices, homeworkers, and domestic servants; safety and hygienic standards; general conditions of work, including wages, hours, and vacations; and the right to organize. The provisions of the code have not always been upheld in practice.

Between 40 and 50 percent of all economically active Bolivians belong to trade unions or peasant leagues. The most important and powerful organizations are the Trade Union Federation of Mine Workers of Bolivia, the General Confederation of Factory Workers of Bolivia, and the Confederation of Railroad Workers of Bolivia. Acting together, these three unions are able to paralyze the Bolivian economy, an ability they have displayed several times in the past 15 years. Since the 1965 labor reform, which included military intervention in the mining districts, the power of the mineworkers' unions has been held in check. Although the leadership and orientation of Bolivia's most important unions has been traditionally of the far left, the power of the extremist elements has greatly decreased in recent years.

### 3. Agriculture

Bolivian agriculture is the least efficient and most backward in South America. Although employing 67 percent of the labor force, agriculture provides only about 22 percent of GDP and is unable to supply the population's food requirements. The Bolivian diet remains one of the poorest in the hemisphere.

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Major factors restraining agricultural development are the shortage of fertile land in the populated regions, the limited size of the commercial market for agricultural products, primitive farming methods, and the inadequacy of facilities for transporting crops and livestock products to urban markets.

Prior to the Revolution of 1952, Bolivian agriculture was dominated by large estates worked by peasants who received the use of small plots. During the revolution, these estates were seized and broken up into very small, owner-occupied farms. While involving social and political benefits, the land reform has created economic problems in the Altiplano and Cochabamba areas, where many holdings are too small to provide more than a bare subsistence level of production. In addition, irrigation facilities, terracing, and other fixed investments were allowed to fall into disrepair.

The government's recent agrarian reform efforts have concentrated on colonizing thinly populated areas in the eastern lowlands. To expand production and relieve overcrowded conditions in western Bolivia, the government has assisted the migration of settlers and has constructed roads to broaden access to new areas. Although the rate of migration has accelerated during the past decade, the total number of migrants still is disappointingly small.

Most of Bolivia's agricultural output consists of subsistence crops consumed by the producer or bartered in local markets. Potatoes are the major subsistence crop in the Altiplano and valley areas. Corn is important both in the eastern lowlands and in the valley areas. Other important subsistence crops are quinoa (an Andean grain), manioc, sweet potatoes, barley, and bananas. Traditionally, the major commercial crops have been wheat, coffee, citrus fruits, and coca. Wheat production has been slowly declining since 1956 because of the competition of cheaper imported wheat flour. Bolivian coffee, produced in the Yungas region north of La Paz, is potentially one of the highest quality coffees in the world. Although production is increasing under the impetus of a government program, the nation has not yet been able to fill its 50,000 bag export quota under the International Coffee Agreement. Coca, a narcotic consumed by virtually all adult Bolivian Indians, is still an important commercial crop in spite of government discouragement.

Since the completion of the Santa Cruz-Cochabamba highway in 1954, which opened the market of Cochabamba and La Paz to agricultural products from the eastern lowlands, commercial

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production of rice, sugar, and cotton has become increasingly important. Most of Bolivia's recent gains in agricultural production have been made on the relatively efficient medium-sized commercial farms in this area. For example, total rice production rose from about 28,000 metric tons in 1954 to an estimated 66,000 metric tons in 1968. Similar gains have been made in cotton and sugar production, although the annual variation in sugar output is somewhat greater than for other crops.

Cattle are raised in all parts of Bolivia, but commercial beef production is centered in the eastern lowlands. The estimated cattle population of 2.5 million is of poor quality and disease and insect infestations are endemic. Although sheep number somewhat over 5 million, there is little commercial production of mutton or wool. Both the llama and alpaca are common in the Altiplano, where they are used as a source of food, wool, and fuel and as beasts of burden.

#### 4. Industry (Mining, Fuels and Power, Manufacturing)

Because of Bolivia's extensive reserves of nonferrous metals, the nation's market economy has been dominated by the mining sector. It is the largest producer of tin in the Western Hemisphere and also produces commercially significant amounts of antimony, bismuth, lead, tungsten, zinc, and silver, as well as small quantities of copper, sulfur, cadmium, and gold. In addition to its nonferrous mineral resources, Bolivia has a large, unexploited deposit of high-grade iron ore estimated at 40 billion tons of iron, or about 10 percent of known world reserves. This deposit, which is located in a remote region near Corumba on the Brazilian frontier, has a high silica content that makes its exploitation uneconomic at present.

In 1966, mining and mineral processing accounted for 12 percent of GDP and employed about 4 percent of the labor force. Mineral ores, concentrates, and refined metals accounted for a little more than 80 percent of export earnings in 1968. Mining in Bolivia remains difficult and costly, however, because of extreme difficulties of access to the mineral deposits. High production costs have made the level of output very sensitive to changes in world market prices for metals. In addition, inadequate supplies of fuels and electric power have hampered the development of mineral processing.

The mining industry is dominated by the Bolivian Mining Corporation (COMIBOL), a government enterprise that took over control of the three largest tin-producing companies (Patino, Aramayo, and Hochschild) when the revolutionary government

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nationalized these companies in 1952. COMIBOL accounts for about 60 percent of value added in mineral production and processing as well as 60 percent of the value of mineral exports. It is by far the largest enterprise in Bolivia, accounting for about 5 percent of GDP and employing about 23,000 men directly and an additional 10,000-12,000 men who supply ore on a contract basis.

In addition to the 20 mines operated by COMIBOL, the private sector operates some 64 medium and 3,000 small mines. These private mines produce almost all of Bolivia's antimony, gold, and sulfur, over 50 percent of the lead, zinc, and copper, and about 30 percent of the tin.

Bolivia ranks eighth among the 20 Latin American republics in the production of primary commercial energy. Production in 1966 was equivalent to 1.1 million tons of coal. A large portion of output, however, is exported in the form of crude petroleum. Consumption of commercial energy was only about 180 kg. per capita in 1966, the lowest in South America except for Paraguay.

The nation's proved petroleum reserves of more than 240 million barrels are exploited by these firms: the Bolivian State Petroleum Co. (YPFB), the Bolivian Oil Company, a small firm owned by US and Argentine interests, and the Bolivian Gulf Oil Company, a subsidiary of the US-owned Gulf Oil Corporation. Production increased from about 500,000 barrels in 1952 to 3.6 million barrels in 1957. After remaining stagnant for almost a decade, petroleum output nearly doubled in 1966 as the result of sizeable investments by the Bolivian Gulf Oil Company. In 1967, Gulf production quadrupled and raised national production to 14.5 million barrels. Production of YPFB declined, however, reflecting the failure to discover new major oilfields and the gradual exhaustion of existing deposits. In 1967, about 72 percent of production was exported, most by way of a pipeline to the Chilean port of Arica. Bolivia also has natural gas deposits estimated at about 2 trillion cubic feet. Natural gas will become an important export when the Argentine-Bolivian gasline is completed in 1970.

The importance of the electric power industry to the national economy lies principally in the fact that it is the primary energy source for tin, lead, and zinc mining. In 1966 total installed capacity was 185,000 kilowatts (kw.), and production was an estimated 575 million kilowatt-hours (kw.-hr.). About 60 percent of capacity and 80 percent of production were provided by hydroelectric installations; the remaining 40 percent



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of capacity consists almost entirely of internal combustion powerplants (diesel and gas turbine). There is no regional or national transmission network.

Although Bolivia's manufacturing sector is still fairly rudimentary, its structure has been changing. Factory output now exceeds that of handicrafts, and industries producing intermediate goods are increasingly important. Production has expanded at an average rate of 5 percent to 6 percent per year since 1959. The greatest relative advances have occurred in the areas of lumber and lumber products, chemicals, and machinery; however, food processing, textiles, beverages and tobacco, and building materials still account for the major portion of value added by the manufacturing sector.

Manufacturing, nevertheless, is still beset by a number of problems. Low utilization of capacity is endemic, along with small-scale equipment, poor plant layout, obsolete technology, and poor managerial skills. Fuel and electric power are scarce and costly. Credit is inadequate. Generally low income levels and the fact that about half the population is outside the money economy restrict demand for manufactures. Legal and illegal imports of cheaper goods from Peru, Argentina, and Brazil compete with Bolivian manufactures.

5. Finance, Investment, and Banking

Perhaps Bolivia's greatest economic achievement has been its successful fight against inflation. A stabilization program, initiated in 1956, replaced a controlled system of multiple exchange rates with a free exchange rate; sharply reduced the budget deficit; limited Central Bank financing of deficits of the autonomous government agencies; reduced credit to the private sector; eliminated government price controls and subsidies on consumer goods; and liberalized regulations regarding private imports, exports, and exchange payments. As a result of the program, the cost of living, which has approximately doubled each year from 1953 to 1957, became relatively stable. Only in one year, 1959, did the cost of living rise by 20 percent. During 1960-1967, prices rose at an average annual rate of about 6 percent, as successive Bolivian governments continued an anti-inflation policy.

During this period, it has been possible to expand the money supply at a rate far in excess of growth in real output without strong inflationary pressures because of the gradual monetization of some economic activities traditionally

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outside the money economy. The money supply expanded at a rate ranging between 9 percent and 26 percent annually during 1960-1966, but the rate of expansion dropped to 3 percent in 1967 and 4 percent in 1968. This reduced expansion, which appears to be the result of decreased demand for credit due to high interest rates and political instability, has acted as a further check on inflation.

Attempts to balance the budget have been less successful. Although current revenues have risen about twice as rapidly as current expenditures since 1964, rapidly increasing investment expenditures have resulted in a growing deficit. In earlier years, budget deficits were financed largely with external grants, but since 1964 they have been covered to an increasing extent by foreign loans and internal borrowing (chiefly from the Central Bank). In 1967, rising military expenditures for counter-insurgency activities and a sharp increase in capital investment raised the overall deficit to 445 million Bolivian pesos, equivalent to more than 5 percent of GDP. Somewhat less than half of this deficit was covered by net disbursements of foreign long-term loans, while the remainder was financed by the Central Bank or covered by a rise in the central government's floating debt. In 1968, although the current account was nearly in balance, the overall deficit totaled an estimated 477 million Bolivian pesos, about 80 percent of which was financed by external borrowing.

Most government agencies are partially dependent on transfers from the central government, although a few of the largest have begun to operate on a self-financing basis. Currently, tax payments are being made by YPFB and the government-owned match factory. COMIBOL made substantial payments to the government in 1966 but suspended them in mid-1967, when its operations failed to meet projected levels. Although total revenues have been growing fairly rapidly, there is an apparent need for additional internal revenues, such as might be derived from the politically controversial agricultural income tax proposed by Barrientos.

From 1964 through 1968, total fixed investment increased at an average annual rate of nearly 10 percent in real terms. During this period, investment has risen from 20 to 23 percent of GDP. Public investment varies between one half and three fifths of total fixed investment, depending in part upon the availability of foreign financing for public sector projects. Private investment grew at an average annual rate of almost 16 percent between 1964 and 1967. A large part of this increase was attributable to foreign investment in the

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petroleum industry. In 1968, total private investment fell by 6 percent, reflecting in part the completion of certain oil industry projects.

The banking system of Bolivia consists of the Central Bank, 14 private commercial banks, and 3 investment banks. The Central Bank is divided into a monetary department and a banking department. The monetary department performs the central banking functions; it grants loans and discounts exclusively to official borrowers and banks and sets discounts and rediscount rates and reserve requirements for commercial banks. The banking department is the most important commercial bank in Bolivia. Its operations are financed by credits from the monetary department, by foreign aid funds, and by private deposits.

6. International Economic Relations

The Bolivian economy is heavily dependent on foreign trade. It is estimated that in 1968 the value of imports and exports of goods and non-factor services equalled about 25 and 20 percent of GDP, respectively. Imported investment goods represent more than half of gross domestic investment, and imported consumer goods and industrial inputs (mainly for domestically produced consumer goods) constitute about one fifth of total private consumption. To pay for these goods, Bolivia relies heavily on foreign exchange earnings from the export of tin, petroleum, and other minerals.

In 1967, tin accounted for 54 percent of export earnings, petroleum for 16 percent, other minerals for 25 percent, and other products (primarily sugar, coffee, coca, hides, and wool) for 5 percent. Capital goods are the most important import, followed closely by consumer goods, each accounting for about 40 percent of the total. About half of the imports of consumer goods consist of foodstuffs, beverages, and tobacco.

The United States is Bolivia's most important trading partner, purchasing about 39 percent of its exports and supplying more than 41 percent of its imports in 1967. However, the importance of the United States as a source of Bolivia's imports has decreased since 1964, when it supplied 51 percent of Bolivia's requirements. During this period, other Latin American countries, Europe, and Japan have increased their sales to the Bolivian market. While supplying only 5 percent of Bolivia's imports, the United Kingdom is the single most important customer for Bolivia's exports, absorbing 43 percent of total exports of 1967.

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Most of these purchases consist of tin ore concentrates, which are refined in British smelters either for domestic use or for re-export. Trade with LAFTA countries has increased significantly and represented 8 percent of Bolivia's exports and 13 percent of imports in 1967.

Bolivia's balance of payments performance improved considerably during the early 1960's culminating in an \$18 million surplus in 1964, followed by a somewhat smaller but still substantial surplus in 1965. Since then, a considerable deterioration has taken place, with an almost negligible surplus in 1966 followed by a \$9 million deficit in 1967. In 1967 Bolivia's net foreign reserves declined to \$33 million from the record \$42 million in 1966. It is estimated that the reserves decreased by an additional \$4 million in 1968.

The 1967 deficit occurred in spite of a continuing improvement in Bolivia's trade balance. Exports rose to \$153.4 million in 1967 while imports totaled \$151.8 million, giving Bolivia a small favorable trade balance on an f.o.b. basis. As a result of a sharp increase in profit remittances and other service payments, however, the deficit on current account rose to \$37 million. Capital inflows on official loans, combined with small amounts of grant aid, increased the surplus on capital account to \$30 million, in spite of a \$1 million net outflow of private capital. This surplus on capital account, while slightly higher than the 1966 figure, is considerably below the \$46 million surplus recorded in 1965, when extensive petroleum investments were being made.

Bolivia's external public debt has more than doubled during the past eight years rising from \$170 million at the end of 1960 to \$370 million at the end of 1968. The terms and interest structure of this debt, however, are favorable. Most of the contracted loans have amortization periods of between 15 and 50 years, and more than 60 percent of the total debt was borrowed at 3 percent or less. In 1968, amortization and interest on the external debt was equal to less than 10 percent of export earnings. It is expected, however, that the debt servicing burden will increase substantially during the next three years.

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B. Transportation

1. General

The Bolivian transportation network is rudimentary. Most roads and railroads are concentrated on the Altiplano and the adjoining mountains and valleys in the southwestern third of the country. In vast areas of the Eastern Lowlands unimproved waterways and limited air flights provide the only transportation.

While estimates of road mileage in Bolivia range from 9,000 to 16,500 miles, only about 3,600 miles are passable throughout the year. Only one major highway is asphalt paved. More than half of the roads are actually cart tracks or trails, traversable by motor vehicles only in the dry season, and in many cases only by vehicles with four-wheel drive. Most of the main and secondary roads are poorly maintained, and many are dangerous to traverse. Washouts and landslides in the mountainous sectors frequently interrupt traffic.

The 2,300 miles of railroad in Bolivia are divided into two major, unconnected systems -- Eastern and Western -- that are generally in poor condition and inefficiently operated. Historically, however, railroads have transported the bulk of Bolivian imports and exports.

Unimproved river channels afford the only means of surface transport in extensive areas of the Eastern Lowlands, although the volume of traffic is low. Rapids and falls along the lower reaches of the two principal streams, the Río Mamoré and the Río Beni, now prevent direct access to the Atlantic Ocean via the Amazon River.

Due in part to the inadequacies of surface transportation, considerable freight and passenger traffic moves by air. The airlines serve a relatively extensive network of airfields although the air fleet is small and generally old. Air routes are the most important and often the only link between isolated settlements in the Eastern Lowlands and the principal urban centers.

2. Roads and Trails

a. Roads

Bolivia's sparse road network is concentrated in the Southwest, where the system was initially developed to serve

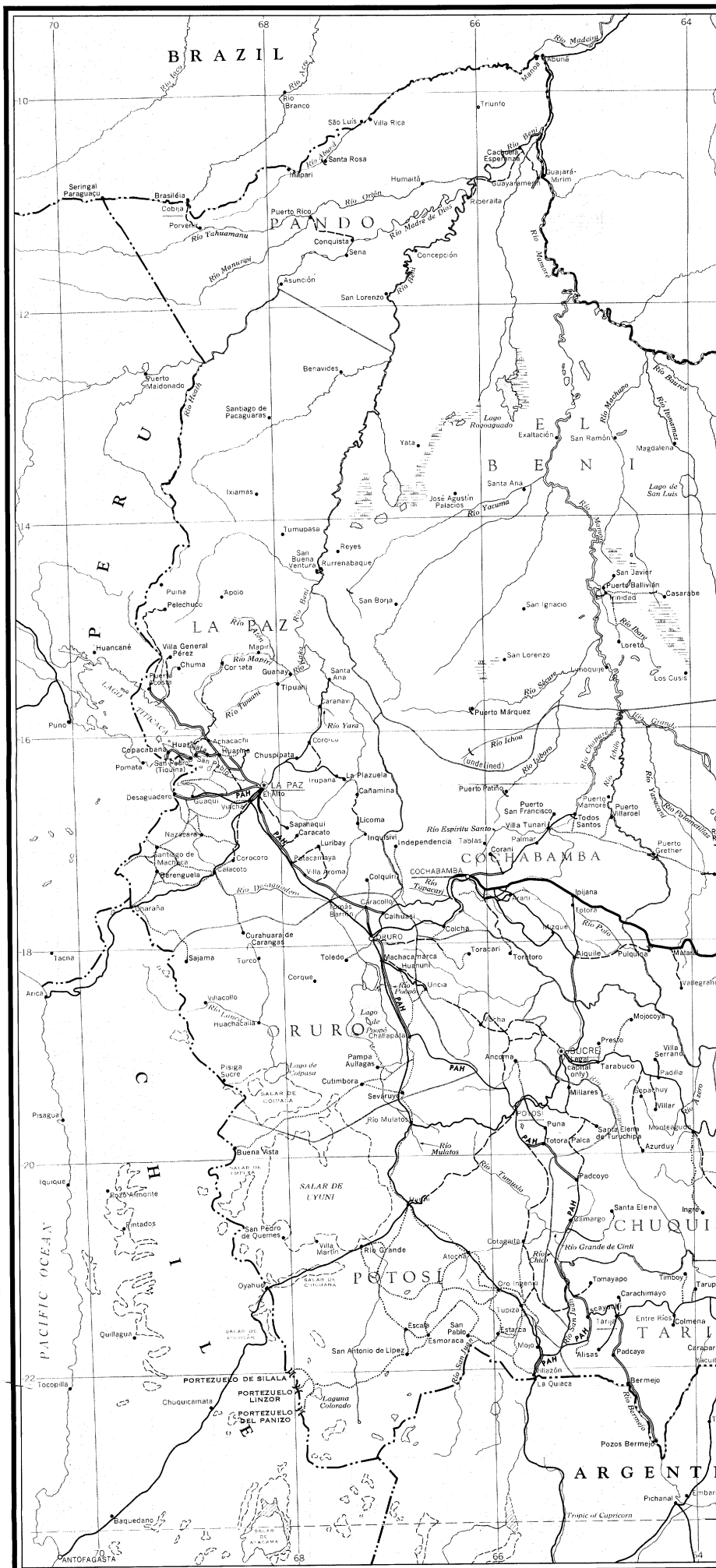
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mining areas and the principal highland population centers. In recent years access roads have been pushed across the Cordillera Real to areas of agricultural colonization in the Yungas valleys and along the margin of the Eastern Lowlands. Eventually they will link the highlands with the heads of navigation on the major waterways in the lowlands. Elsewhere within the vast lowlands there are few roads worthy of the name.

The primary road network consists of two main trunk routes and several branches (see Map 58020). The principal east-west route extends from the Peruvian border at Desagüadero (16°34'S 69°02'W) eastward via La Paz, Caihuasi (17°43'S 66°59'W), and Cochabamba (17°24'S 66°09'W) to Santa Cruz (17°48'S 63°10'W). The main north-south route, which coincides with the Pan-American Highway for most of its extent, stretches from Puerto Acosta (15°32'S 69°15'W), on Lago Titicaca, southward by way of La Paz, Oruro (17°59'S 67°09'W), and Potosí (19°35'S 65°45'W) to the Argentine border at Villazón (22°06'S 65°36'W). A connecting route extends from Ipijana (17°34'S 65°14'W) on the east-west trunk route, southward through Sucre (19°02'S 65°17'W) to Potosí. A branch route projects southeastward from Sucre to Camiri (20°03'S 63°31'W), and another extends from Iscayachi (21°31'S 65°03'W), on the Pan-American Highway, eastward to Villa Montes (21°15'S 63°30'W). Penetration routes lead from La Paz northward to Santa Ana (15°31'S 67°30'W), from Cochabamba northeastward to Todos Santos (16°48'S 65°08'W) and from Santa Cruz northward to Guabirá (17°19'S 63°16'W).

The only paved sections of the primary routes are the Cochabamba-Santa Cruz Highway (Figure 102), the Santa Cruz-Guabirá penetration road, and two very short segments of the Pan-American Highway in the vicinity of La Paz and Oruro. The highest volume of traffic reportedly occurs on the Cochabamba-Santa Cruz Highway, the only highway on which 10- to 12-ton semitrailers are used. This highway is not adequately maintained, and the asphalt surfacing has deteriorated badly in places. It is slippery and dangerous when wet. The road climbs steadily from Cochabamba to an elevation of approximately 12,500 feet on the crest of the Cordillera de Cochabamba and then descends via a twisting, often precipitous route through rugged canyons and over numerous rivers to Santa Cruz at an elevation of 1,600 feet (Figures 103 through 105). At the crest a 10-mile stretch of road remains unpaved due to adverse weather and ground conditions. These heights are enshrouded in clouds, and the ground is soft and unstable because of the perpetual rain, fog, and mist (Figures 106 and 107). Permanent maintenance crews are stationed here at "Siberia" to keep the road passable.







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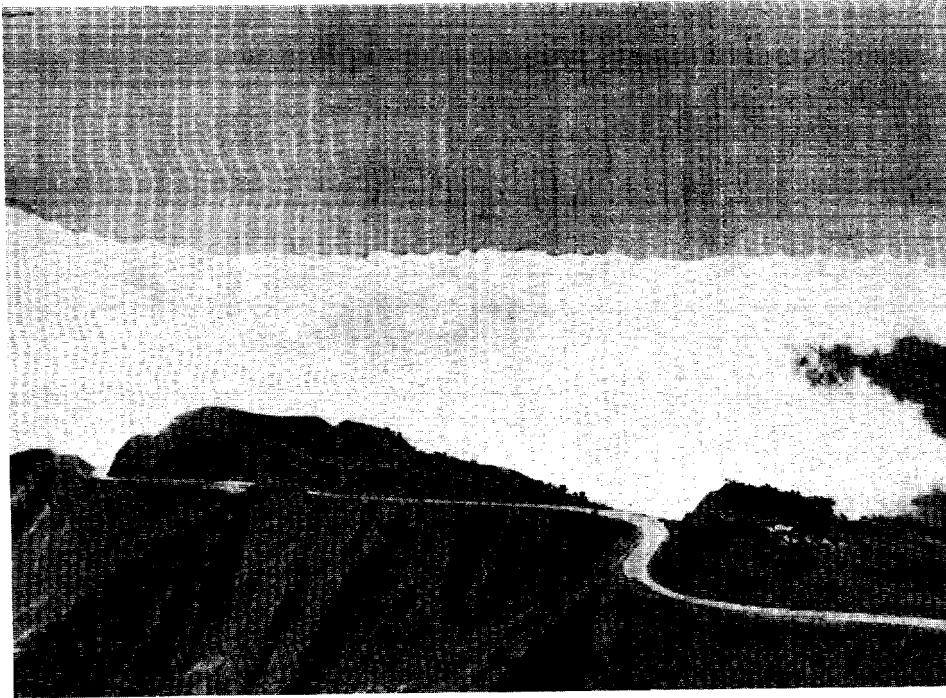


Figure 102.  
Section of  
paved  
Cochabamba-  
Santa Cruz  
Highway.

Figure 103. Series of turns  
along Cochabamba-Santa Cruz  
Highway.



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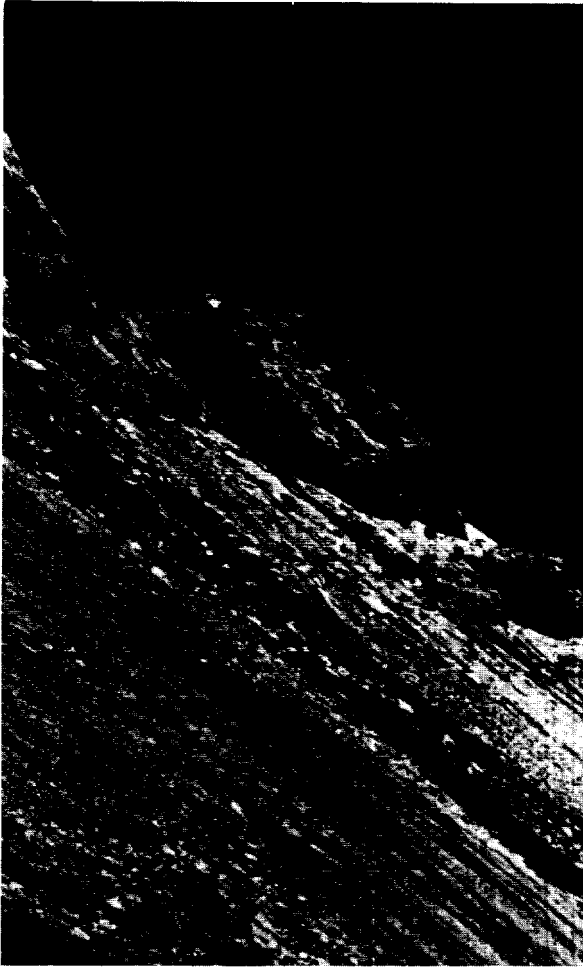
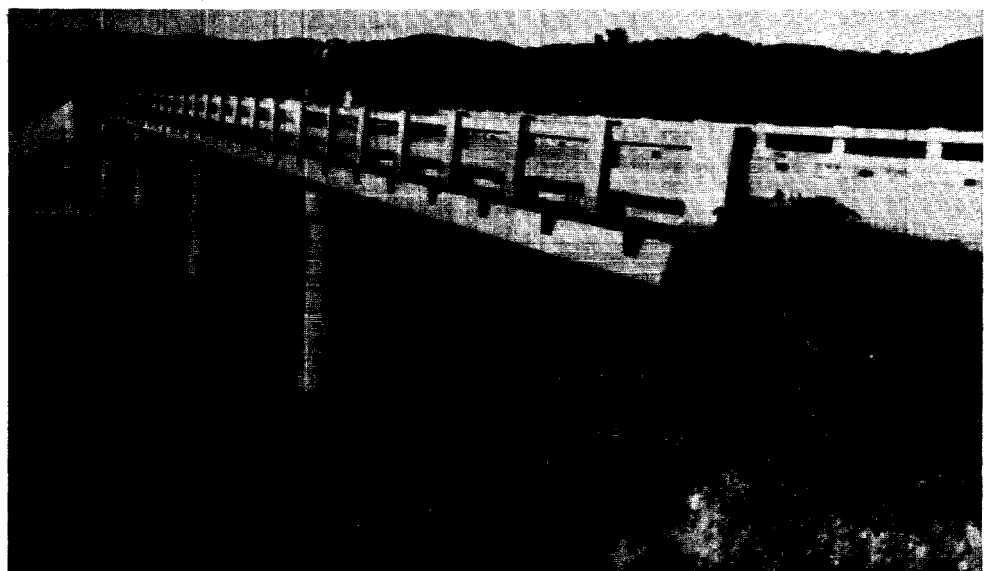


Figure 104. Precipitous slopes along Cochabamba-Santa Cruz Highway.

Figure 105. Cochabamba-Santa Cruz Highway Bridge over Río Piray.



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Figure 106. Cochabamba-Santa Cruz Highway at "Siberia". Note fog and muddy road surface.



Figure 107. Gasoline trucks mired in mud at "Siberia".

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Segments of the east-west route west of Cochabamba are unpaved. Between Desaguadero and Caihuasi the road is two lanes wide, and the gravel surface is passable in all weather (Figure 108). From Caihuasi to Cochabamba the road crosses rugged terrain and generally is very difficult to negotiate during the rainy season (December through March). The earth and rock surface of approximately one-fourth of this segment of the road is only one lane wide.

The north-south route is an all-weather gravel road, two lanes wide, from Puerto Acosta to Challapata (18°54'S 66°47'W). From Challapata southward to Villazón it varies in width and condition (Figure 109). Although the road is classified as an all-weather route on a recent map of the Bolivian National Road Service, during the rainy season several segments probably are passable only by four-wheel drive vehicles.

The remaining roads of the primary network, while relatively narrow, are normally passable in the rainy season. Traffic on all of the primary roads is subject to periodic interruption because of landslides, washouts, or flooding (Figure 110).

A special effort has been made to keep the penetration routes open from La Paz to Santa Ana and from Cochabamba to Todos Santos. These incredible roads climb over passes 14,000 to 15,000 feet in elevation and then descend precipitously, by switchbacks, to the valleys below (Figure 111). They are narrow, and on the Cochabamba-Todos Santos route only one-way traffic is allowed. Northbound traffic is permitted on Wednesdays and Saturdays and southbound traffic on the other days of the week. Steep grades, blind turns, and frequent rain and fog make driving hazardous in the mountains (Figure 112). Traffic is periodically interrupted by flooding in the lowland section of the Cochabamba-Todos Santos road, between Villa Tunari (16°57'S 65°24'W) and Todos Santos. There is no bridge across the Río Espíritu Santo at Villa Tunari. The river can be forded during periods of low water, and there is a cable car (See Figures 113 and 114) and a small vehicle barge ferry to transport traffic. During periods of high water, however, there are delays in crossing because of the limited capacity of the cable car and the ferry.

While secondary and feeder roads constitute most of the road network, the extent in each category of road is unknown. In theory, secondary roads are seasonal dirt roads, and feeder roads are unimproved cart tracks or trails, traversable by motor vehicles in the dry season. In actuality, roads in the two categories appear to differ only in their degree of

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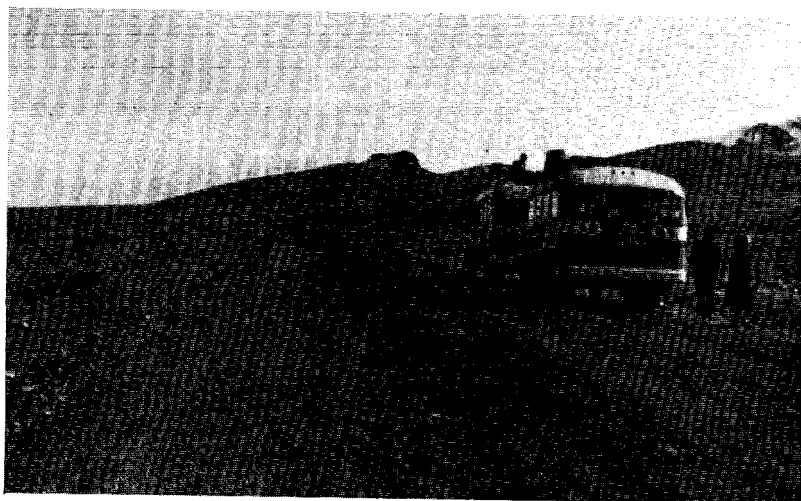


Figure 108. All-weather gravel road between La Paz and Desaguadero.



Figure 109. Section of Pan-American Highway near Villazon.

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Figure 110. Landslide blocks section of Cochabamba-Santa Cruz Highway.

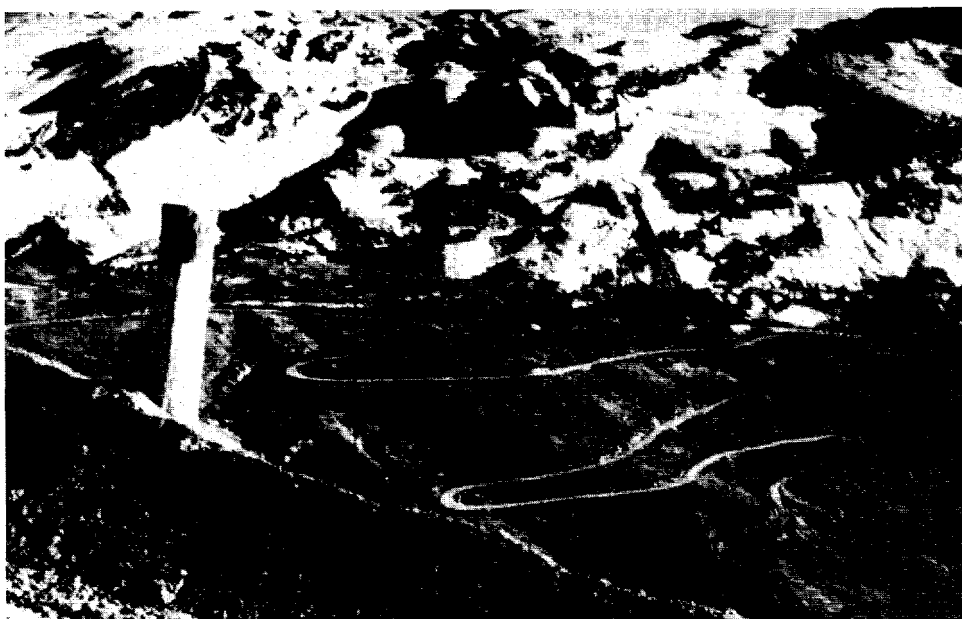


Figure 111. Switchbacks on La Paz-Santa Ana road.

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Figure 112. Fog-shrouded section of narrow Cochabamba-Todos Santos road.



Figure 113. Cable car across Río Espíritu Santo.

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disrepair and danger. The few existing improved dirt roads seldom are maintained adequately outside the urban areas and, as a result, they deteriorate rapidly. If the road surface is breached by a washout or the collapse of a culvert in relatively flat areas, trucks simply detour around the obstacle until a new track is beaten out. In many places there are detours around detours (Figures 115 and 116). Most roads follow old wagon tracks or trails and some, such as the road from Santa Cruz to Yacuiba ( $22^{\circ}02'S$   $63^{\circ}45'W$ ), were formed merely by the repeated passage of trucks over the trails. Bridges are frequently nonexistent, and the roads cross streambeds at natural fording places (Figure 117). Drainage is very poor on the vast majority of roads (Figure 118). In some cases the road lies 1 to 3 feet below the general surface level, and the only drainage is into the roadbed rather than away from it. Such roads are muddy and impassable during the rainy season and rough and dusty in the dry season.

Some tracks and trails in mountainous terrain follow streambeds and are utilized by motor vehicles during the dry season (Figure 119). During the rainy season, vehicular traffic on such routes is limited to brief periods when the floodwaters recede. There is always a danger that vehicles may be trapped by flash floods on trails that wind along narrow canyon floors. Tracks that follow water divides are more likely to be passable during the rainy season (Figure 120).

Little reliable information is available concerning the network of secondary and feeder roads on the Altiplano. Available maps show a relatively dense network of unimproved tracks and trails in the northern and southern parts (Figures 121 through 123), but route delineation differs greatly from map to map. There are very few tracks or trails in the central part between Lago de Poopó and the Salar de Uyuni and Salar de Coipasa (salt flats). Although some local people drive across the salt flats regularly to the Chilean border, only persons thoroughly familiar with the area should try this. The margins of the salt flats are soft and treacherous, and safe entrances and exits can be made at only a few known points. Once out on the flats, vehicular traffic can move pretty much with impunity as long as the surface is not covered with water and the driver can see to avoid holes.

Vast reaches of the Eastern Lowlands have no roads. Much of this region is subject to seasonal flooding, and extensive areas in the north are heavily forested. The unimproved seasonal road or track from Santa Cruz to Yacuiba skirts the lowland, and several seasonal tracks lead eastward from it



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Figure 114. Closeup of cable car.



Figure 115. Detours around detours  
across mudflats on Altiplano.

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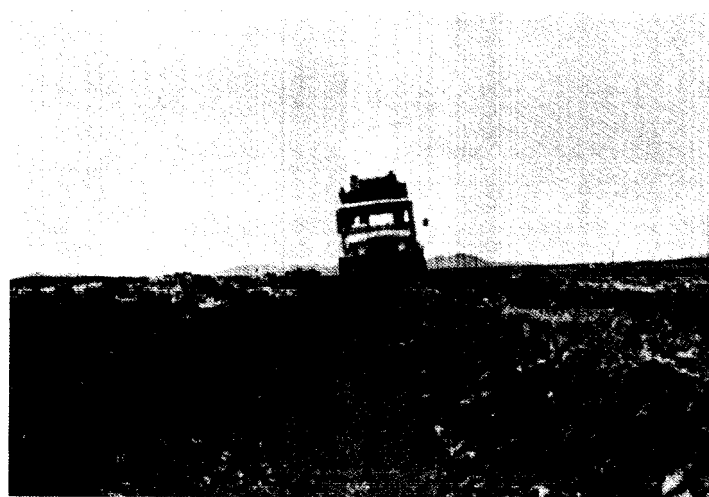


Figure 116. Closeup of ruts.

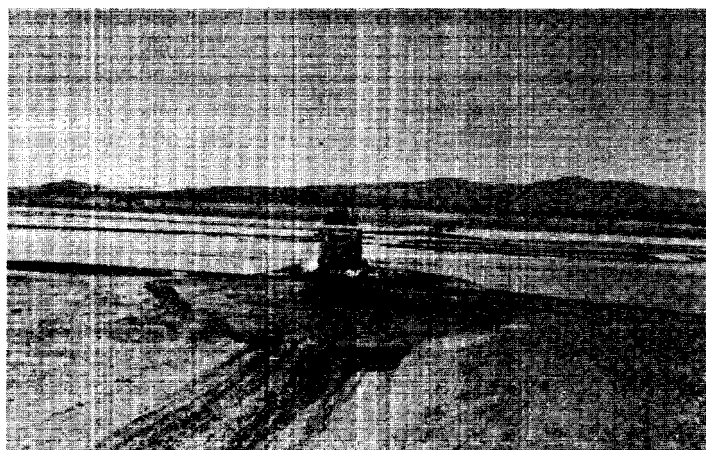


Figure 117. Fording a river on Altiplano during dry season.

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Figure 118. Poorly drained section of Santa Cruz - Yacuiba road near Villa Montes.

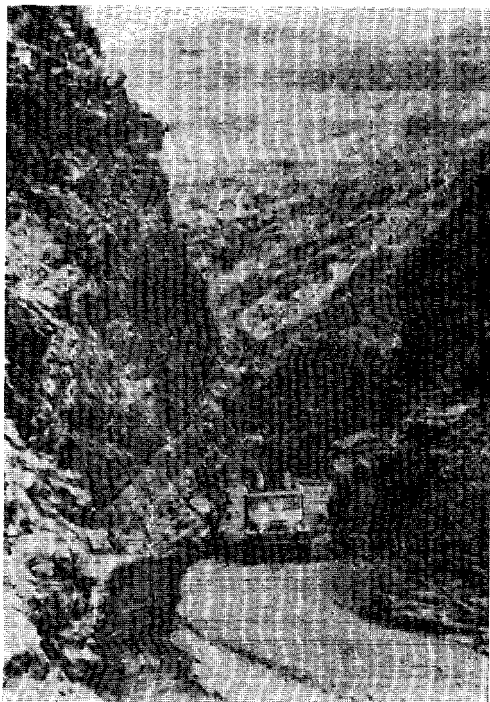


Figure 119. Streambed utilized as a road during dry season.

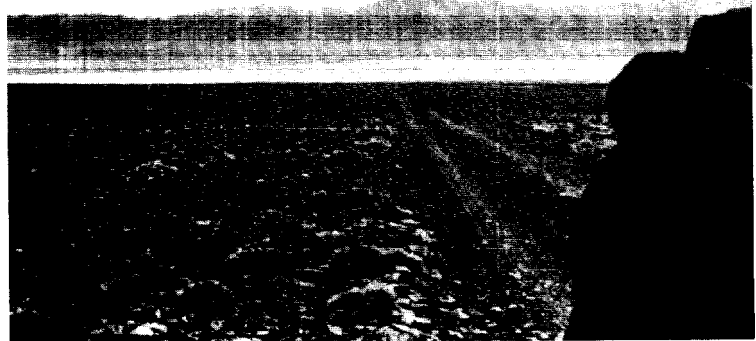
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Figure 120. Track along narrow water divide.

Figure 121. Track across Altiplano near Laguna Colorada.



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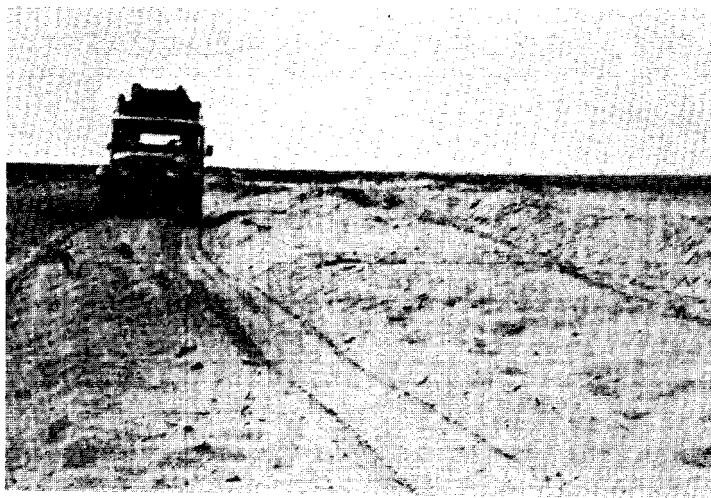


Figure 122. Loose sand along track near Uyuni.



Figure 123. Severely eroded section of track southwest of Uyuni.

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to the Paraguayan border. Secondary roads extend from the Santa Cruz-Guabirá paved road to San Carlos (17°24'S 63°45'W) on the Río Yapacani and to Remanso (17°34'S 62°49'W) on the Río Grande (Figure 124). Three short seasonal roads in the extreme northern part of the lowland interconnect ports on different rivers. Roads are under construction and trails have been opened in parts of the agricultural colonization zone between Santa Cruz and Todos Santos (Figure 125). Elsewhere in the lowlands, cart tracks and trails serve scattered settlements. The oxcart is the usual vehicle; however, some of the tracks are jeepable in the dry season. A few motorcycles have been introduced recently in the larger settlements.

As of 1 January 1967, there were 18,143 passenger cars, 14,546 trucks, and 1,597 buses registered in Bolivia. Rules governing vehicle loads are lacking; overloaded trucks cause considerable damage to bridges and roadbeds designed for lesser weights. Traffic laws are generally ineffective. Outside the urban centers there is little control, and in the cities traffic is regulated by police only during daylight hours. Traffic lights are almost nonexistent after dark, and stop signs and similar indicators are unknown, even in the capital. Careless drivers are rarely arrested. As a result of these factors and the hazardous roads, the country has one of the highest accident rates per vehicle-mile in the world.

Gasoline pumps are few and far between outside the larger cities. For example, in 1960 there were no pump stations along the main highway between La Paz and Cochabamba and only two such stations between Cochabamba and Santa Cruz. Sometimes gasoline can be purchased at stores in small towns along the main routes, where it usually is siphoned from 50-gallon drums into 5-gallon cans and then poured into the vehicle tank.

Public transportation has improved in recent years, and buses connect most of the population centers that are located on the primary highway network (Figures 126 and 127). In many areas trucks carry passengers (Figure 128).

## 2. Trails

Numerous tracks and trails are suitable only for pack animals and for foot travel. Most of the trails are not mapped, and in heavily forested areas they generally are not discernible on aerial photographs.

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Figure 124. Caravan fording Rio Piray west of Guabirá. A bridge across the Rio Piray was nearing completion in June 1967.



Figure 125. Narrow jungle roads in colonization zone north of Santa Cruz.

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Figure 126. Bus used between Chuspipata and Coroico on the La Paz-Santa Ana road.

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Figure 127. Bus on mountainous section of Cochabamba-Santa Cruz Highway.

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Figure 128. Passengers riding on loaded truck.

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Pack animals are still widely used for local transportation in the highlands (Figures 129 and 130). Llamas are more commonly used at higher elevations on steep, narrow mountain trails, and burros are used in the quebradas (ravines) and the larger valleys. Pack trains transport minerals, for example, from mines to the railheads and carry agricultural products and firewood from villages to the larger towns. On the return trips they carry flour, wheat, and various commercial articles.

Burro trains consisting of 10 to 30 animals cover from 12 to about 20 miles per day, depending on the weather, condition of the animals, and the load carried. Each burro can carry a load of about 165 pounds. Llama trains are larger -- from 20 to 70 animals -- since spares are required. The llama will carry a load (100 to 120 pounds) for only one day at a time, and must be left free from any burden on the succeeding day; therefore, the herdsman usually takes two or three complete sets of animals each trip. Both burros and llamas feed on shrubs or vegetation along the riverbanks and do not require supplemental food. Most pack trains actually travel very short distances -- seldom more than 20 miles.

Foot trails in the mountains are generally very narrow, steep, and rocky (Figure 131). They often follow dry streambeds. Larger streams are crossed by means of rope suspension bridges or by oroyas (cableways). An oroya consists of a basket, seat, or trapeze suspended from a pulley that runs along a wire cable stretched across the river or valley. The traveler hauls himself across or is drawn from one side to the other by means of a rope.

Horse trails and oxcart tracks are common in the Eastern Lowlands, particularly in the grassland areas (Figures 132 through 135). The oxcart is the only reliable means of transportation over the muddy plains in the rainy season.

Human portage is widespread among the lowland Indians. Burros or horses are useless on primitive trails in remote areas of the forested lowlands. Numerous small streams and arroyos must be crossed, and every mile or so larger streams are reached that may be 10 to 30 feet wide and 5 to 15 feet deep. The stream bottoms are generally a morass of mud and soft sand, and pack animals bog down if they attempt to plunge through the quagmire. A felled tree will serve as a footbridge for a man but not for pack animals. Another problem is the lack of forage for burros or horses along jungle trails. The ground is generally wet beneath the tropical forest, and in many places the mud along the trails

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Figure 129. Llama pack train near Potosí.



Figure 130. Burros used as pack animals.

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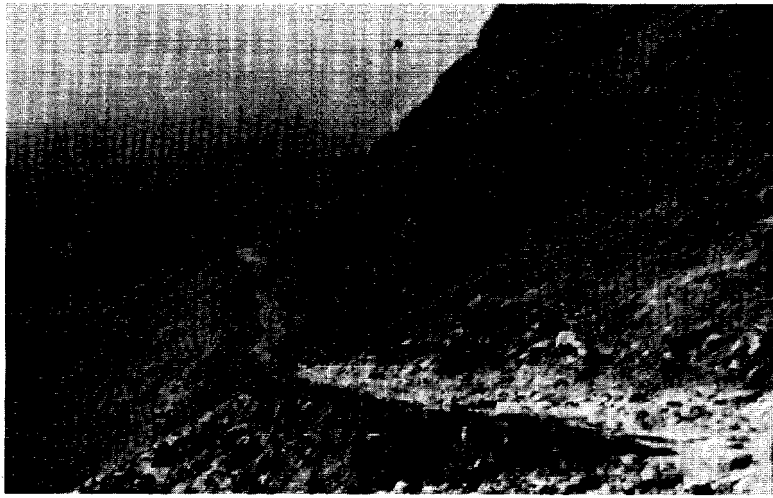


Figure 131. Old Inca road used as foot trail.



Figure 132. River crossing in northern lowlands. Horses are unsaddled and led across the river.

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Figure 133. Oxcart on track near Trinidad.



Figure 134. Fording an arroyo by oxcart.

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Figure 135. Saddled riding ox.

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may be ankle deep even in the dry season. The foot traveler can negotiate such trails once he abandons the notion of keeping his feet dry. In such conditions, 15 miles would be considered a good day's hike. During the rainy season whole segments of jungle trails are impassable on foot, and dugout canoes become the most reliable means of travel.

### 3. Railroads

The railroads are the principal carriers of freight in Bolivia. They consist of meter-gage, single-track lines that are divided into two major systems. The Western System links the mining areas and the principal population centers in the highlands with seaports in Chile and Peru. The lines of the Eastern System connect Santa Cruz with railroads in Argentina and Brazil.

The Western System consists of seven state railways that were recently merged into a single system operated under authority of the National Railway Enterprise. One private company, the Guaqui-La Paz Railway, though administered and operated separately, connects with and is considered part of the Western System. The La Paz-Charaña and the La Paz Oyagüe segments of the system connect with Chilean railroads at the international border, forming through routes from La Paz to the ports of Arica and Antofagasta, respectively. The Guaqui-La Paz Railway connects with the Southern Railway of Peru at Puno via a ferry across Lago Titicaca (Figure 136). This route provides access to the Peruvian ports of Matarani and Mollendo. Bolivia's mineral ore exports and most of her imports of foodstuffs, machinery, and essential commodities are transported over these three routes. Branch lines extend from Oruro through Cochabamba to Mizque (17°56'S 65°19'W) and Arani (17°34'S 65°46'W); from Machacamarca (18°10'S 67°02'W) to Uncia (18°27'S 66°37'W); from Río Mulatos (19°42'S 66°47'W) through Potosí and Sucre to Tarabuco (19°10'S 64°57'W); and from Uyuni (20°28'S 66°50'W) to Villazón at the Argentine frontier, where connection is made to Buenos Aires via the Argentine State Railways.

The Eastern System consists of the Corumbá-Santa Cruz Railway and the Yacuiba-Santa Cruz Railway. The former is operated by the National Railroad Directory. At Corumbá it connects with a Brazilian line to São Paulo. The Yacuiba-Santa Cruz Railway, under the administration of an autonomous Bolivian-Argentine commission, connects with the Argentine State Railways, which provide service to Buenos Aires. A seldom-used branch line extends to Cuevo (20°27'S 63°32'W) from the main line near Boyuibe (20°25'S 63°17'W).

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On the Altiplano the railroads operate at elevations between 12,000 and 13,500 feet, and the lines are laid out in long, straight sections with slight grades. The principal exception is the descent from El Alto (16°30'S 68°10'W) to the city of La Paz. The track over this 5.6-mile section is electrified and has a 7 percent gradient.

Branch lines extend from the Altiplano into the adjacent zone of mountains and valleys and cross difficult terrain at elevations ranging from about 8,000 to 15,000 feet. Numerous sections have long grades of 3 percent and curves with a minimum radius of 246 feet. There are many bridges and some 22 tunnels on these lines.

The railroads of the Eastern System have long, straight sections of track and gentle gradients. The ruling gradient on the Yacuiba-Santa Cruz line is 0.8 percent, and the sharpest curves have a radius of 820 feet. The ruling gradient on the Corumbá-Santa Cruz line has been estimated as 2.5 percent; data on the minimum radius of curvature are unavailable. Major bridge construction was required to span the Pilcomayo, Parapetí, and Grande rivers. The longest of these bridges crosses the Rio Grande on the Corumbá-Santa Cruz line, on which there is also one 1,312-foot tunnel.

Roadbeds, which generally lack ballast, range from barely adequate to deficient. Ninety percent of the track is more than 40 years old. The tracks of the La Paz-Oyagüe main line on the Altiplano and the relatively new Yacuiba-Santa Cruz Railway are substantially better than the average. The roadbed of the Corumbá-Santa Cruz Railway is in the poorest condition of all. The tracks are uneven, and frequently ties are ignited by the burning ashes that are dumped from woodburning locomotives. Replacement ties are in short supply; on the line between Cochabamba and Mizque wornout ties have been replaced by large rocks inserted under the rails. Maximum axleload limits range from 14.5 to 18 short tons.

Most rolling stock is old. Steam locomotives, powered by fuel oil, predominate on the Western System, and wood-burning locomotives on the Eastern System (Figure 137). Diesel engines are used on the branch line from Machacamarca to Uncia, and on the Corumbá-Santa Cruz line. The Guaqui-La Paz Railway uses six electric locomotives on its short electrified section from El Alto to La Paz.

Passenger trains are operated on the main lines, and self-propelled passenger cars (autocarriles) are used on some of the branch lines. The autocarriles, powered by

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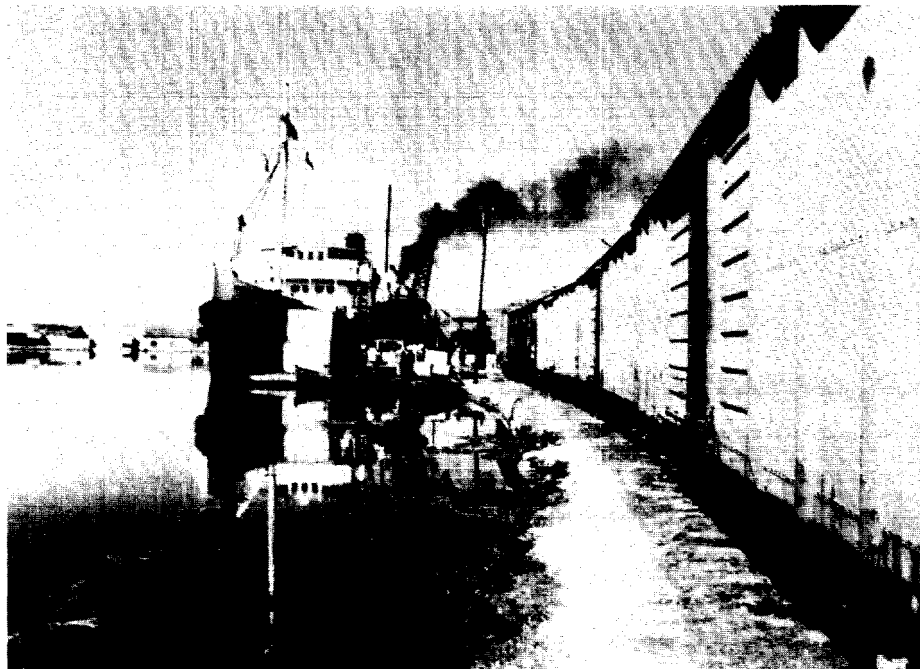


Figure 136. Dockside loading area at Guaqui.



Figure 137. Woodburning locomotive on the Corumbá-Santa Cruz railroad line.

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Figure 138. Autocarril or self-propelled railroad passenger car.

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gasoline engines, range from old automobiles mounted on special railroad bogies to newer buses adapted for running on rails (Figure 138). Several autocarriles operate on the La Paz-Oruro-Cochabamba-Mizque line. A similar service, called the litorina, operates once a week on the Corumbá-Santa Cruz line. The mixed passenger and freight train that also operates on the Corumbá-Santa Cruz line has been the source of many anecdotes. Until the recent changeover to diesel power, this run took anywhere from 2 to 6 days to complete, depending upon the number of mechanical breakdowns experienced by the woodburning locomotive. The old passenger cars reportedly are still used -- the first-class coach has wooden benches and no panes in the window frames; the second-class cars are windowless boxcars without seats. People frequently ride on top of the cars.

4. Inland Waterways

While Bolivia's inland waterways carry only a minor part of the total volume of cargo transported annually, they are of great significance in large sectors of the Eastern Lowlands. Navigable rivers total 6,000 miles in length; another 12,000 miles could be improved for modern barges.

Bolivia is divided into three drainage networks. The most extensive system, consisting of rivers that drain the central and northern parts of the country and flow northward to the Amazon, include the Río Beni, the Río Mamoré, and their many tributaries. Rivers in the southeastern part of the country, draining southward as part of the Río de La Plata system, include the Río Paraguay, Río Pilcomayo, and the Río Bermejo. The third system of interior drainage on the Altiplano is composed of Lago Titicaca, the Río Desaguadero, and Lago de Poopó.

The rivers of the Amazon and La Plata systems, with headwaters in the high mountains, are swift and turbulent along their upper courses. Upon reaching the lowlands they become slow, sluggish, and shallow. The rivers flow in an endless series of meanders and frequently change course. Unstable riverbanks are easily undermined during floods. Fallen trees protrude into the channels and pile up at the meander curves, snagging masses of lesser debris and forming barriers to navigation.

Rivers are subject to sharp variations in water level. The period of high water extends roughly from October to May. As the water level drops in June and July, an increasing number of obstacles to navigation -- sandbars, rapids, and

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tree trunks -- are exposed. Expanses of mud along the riverbanks make landing difficult during this period. Low water level, reached in late July or August, generally continues for the remainder of the dry season; sudden temporary rises in the water level, however, are not uncommon if heavy storms occur in the headwater areas. Navigation is generally easier at high-water stage, but there is always the danger of striking objects concealed just below the surface. Extensive areas adjacent to the rivers are flooded during the rainy season; in some areas one may travel considerable distances across country by dugout canoe or small flat-bottomed boats.

The general characteristics of navigable rivers are given in Table 2. Riverboats operate on the main rivers and on the larger tributaries (Figure 139). Most vessels are powered by steam engines with wood-fired boilers; a few have diesel or gasoline engines. The riverboats generally steam throughout the night on the larger rivers, but on smaller streams they navigate only during daylight. Shallow-draft motor launches ply the smaller navigable tributaries as well as the main rivers and large tributaries, pulling large flat-bottomed barges, one on each side (Figure 140).

Rafts and dugout canoes are used locally on rivers and streams not suitable for regular commercial navigation. These streams are usually too narrow, shallow, turbulent, or encumbered by rapids for general use.

Considerable down-stream rafting is done on the turbulent rivers of the northern Yungas area, particularly on the tributaries of the upper Río Beni. A single raft (balsa) is built of seven balsa logs -- no more and no less -- riveted together with pins of ironwood. The bow of the raft is pointed and the logs are bent upward to form a prow. To carry heavy loads, two or more balsas are lashed together to form a large platform called a callapo (Figure 141). A four-raft callapo can carry a ton or more of cargo. The platform is covered by woven bamboo mats and a canopy of mats may be added for shelter. The floor of the callapo may be submerged slightly below the surface by the weight of the load making it necessary to stow dry clothes and perishable cargo in waterproof sacks. Indian boatmen, one at each corner of a callapo, skillfully navigate the craft through dangerous rapids and whirlpools.

Dugout canoes also are used locally on these rivers (Figure 142). One reportedly may travel by canoe from Guanay (15°28'S 67°52'W) up the Río Mapiri to Mapiri (15°15'S 68°10'W); up its tributary, the Río Atén, to Apolo (14°43'S 68°31'W); and from Tipuani (15°33'S 68°00'W) via the Ríos

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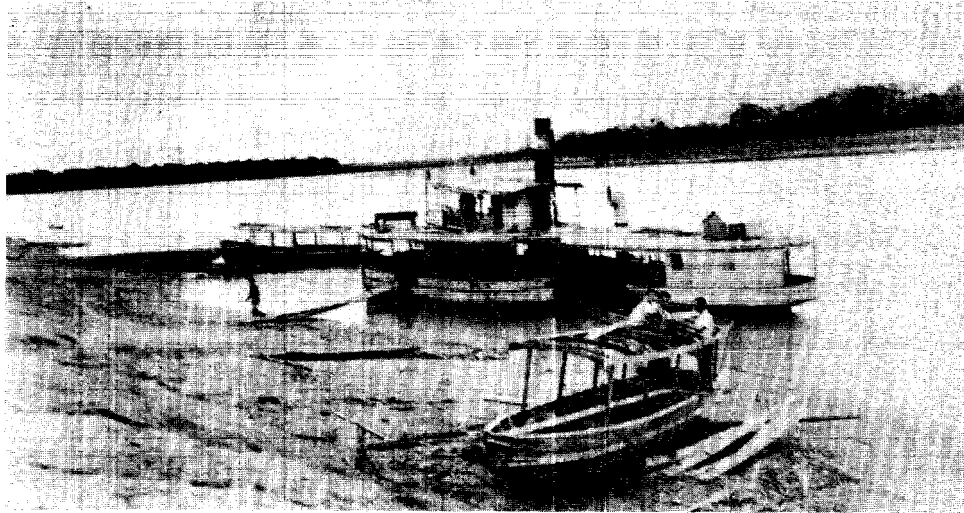


Figure 139. Rivercraft at Riberalta on the Río Beni.



Figure 140. Launch pulling barges on the Río Mamoré.

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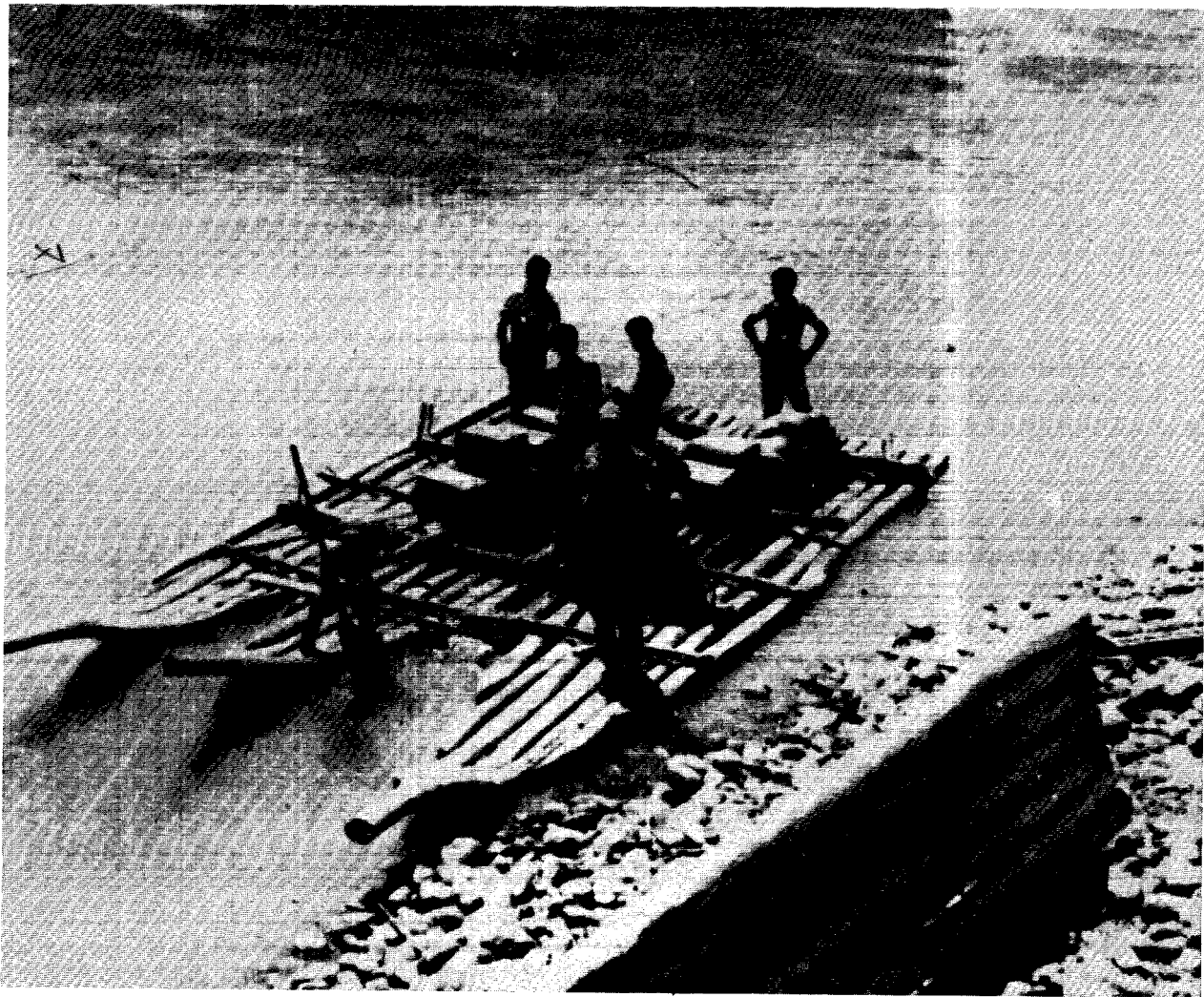


Figure 141. Callapo, consisting of balsa rafts lashed together.

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Figure 142. Typical outboard-powered dugout canoe.

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Tipuani, Kaka, and Beni to Santa Ana (15°31'S 67°30'W). Dug-outs also can be used on small streams in the Eastern Lowlands, such as the Rio Heath that flows along the Bolivian border with Peru. Boatmen with local knowledge of a particular river are needed to pilot canoes over shoals, rapids, and other obstacles. Canoes can pass upstream through rapids with little difficulty through proper use of punting poles and by gunning the motor at the proper time. Ropes and cables occasionally are needed to pull boats through rapids, and portage may be necessary. Overhanging tree branches, tangled roots along river bottoms, canebrake, and fallen trees impede movement in places, particularly along small lowland streams. Snakes on overhanging branches and sting rays and electric eels in the quieter reaches of streams are hazards for the unwary.

On the Altiplano the inland waterway system consists of Lago Titicaca, the Río Desaguadero, and Lago de Poopó. Lago Titicaca is navigable by small steamers. While the eastern side is very deep, steamers sometimes run aground on the shallow southern part. The water level fluctuates seasonally. Summer rains and melting snow may cause a rise of 5 to 6 feet above low-water level. Lake steamers of the Peruvian Corporation ply between the rail terminals at Guaqui, Bolivia, and Puno, Peru (Figure 143). Daily hydrofoil service was recently introduced between Huatajata, Bolivia (16°10'S 68°44'W), and Puno. Isolated communities of Indians live on islands in the lake. Sailing boats ferry people to the mainland each day, using onshore winds in the morning and offshore winds in the evening (Figure 144). Native fishing boats abound on the lake. The principal fishing grounds are situated within two miles of the lakeshore. Men fishing for carachi use the picturesque balsa boats, made of totora reed (Figure 145), whereas trout fishermen generally use 15-foot wooden boats. The fishermen do not use outboard motors but row out to check their nets before dawn, returning about 10 a.m. to deliver their catch to the waiting cannery trucks.

The Río Desaguadero, the outlet for the lake, drains into Lago de Poopó. The Río Desaguadero, about 250 miles long, is navigable by shallow-draft boats during high-water periods only. Lago de Poopó, relatively shallow, is of little importance for navigation.

#### 5. Air Transportation

Much freight and passenger traffic moves by air because satisfactory surface transportation is lacking in many parts of the country. Airlines provide regular service during the

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Figure 143. S.S. Ollanta on Lago Titicaca.  
Note the tiny balsa boat in the foreground.

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Figure 144. Passenger ferryboats on Lago Titicaca.

Figure 145. Balsa boat made of totora reed.



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dry season to many isolated towns in the Eastern Lowlands. Only limited service is provided during the rainy season when most airstrips in the lowlands are rendered unserviceable.

Braniff International Airlines maintains a regular schedule of international flights to La Paz. Lloyd Aéreo Boliviano (LAB), the largest civil airline, provides scheduled service to 31 domestic airfields as well as to Arica, Chile; Buenos Aires and Salta, Argentina; Corumbá and São Paulo, Brazil; and Lima, Peru. The company operates 11 aircraft, using Douglas DC-6B models on international flights and Douglas C-47/DC-3's and converted Boeing B-17G bombers on domestic flights (Figures 146 and 147). The company has a generally poor service record, the result of inefficient management.

Transportes Aéreos Militares (TAM), the military air transport unit of the Bolivian Air Force, provides both scheduled and nonscheduled civil air service, using C-47 aircraft. Most flights are to airfields not regularly served by LAB but some flights are competitive with those of commercial airlines.

Ten private nonscheduled and charter carriers were registered as of March 1967. Most of these small operators have one or two cargo planes and provide specialized services and/or fly into small towns that are not served by LAB or TAM. Relatively more significant than the others are Compañía Boliviana de Aviación (BOA), Aerolíneas Abaroa, and Transportes Aéreos Benianos, S.A. (TABSA).

BOA is a well-run organization operating nonscheduled passenger/cargo flights from La Paz to various airfields in northern Bolivia and, on occasion, to Arequipa, Peru, and Arica and Antofagasta, Chile. More than half the cargo flown consists of meat produced on the cattle ranches in the lowlands. The company has six aircraft, ranging from Curtiss C-46 cargo planes to converted B-17 and B-24 bombers.

In terms of freight tonnage carried, Aerolíneas Abaroa occupies third place among all the civil airlines. It operates four Douglas C-47 and one Curtiss C-46 aircraft. No information is available concerning the types of cargo carried or the specific areas of operation.

TABSA operates two C-46 cargo planes and one converted B-25 bomber on nonscheduled domestic and international flights. It has been operating the C-46's between La Paz and Miami as

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Figure 146. Lloyd Aéreo Boliviano DC-3 aircraft at the Tarija Airport.

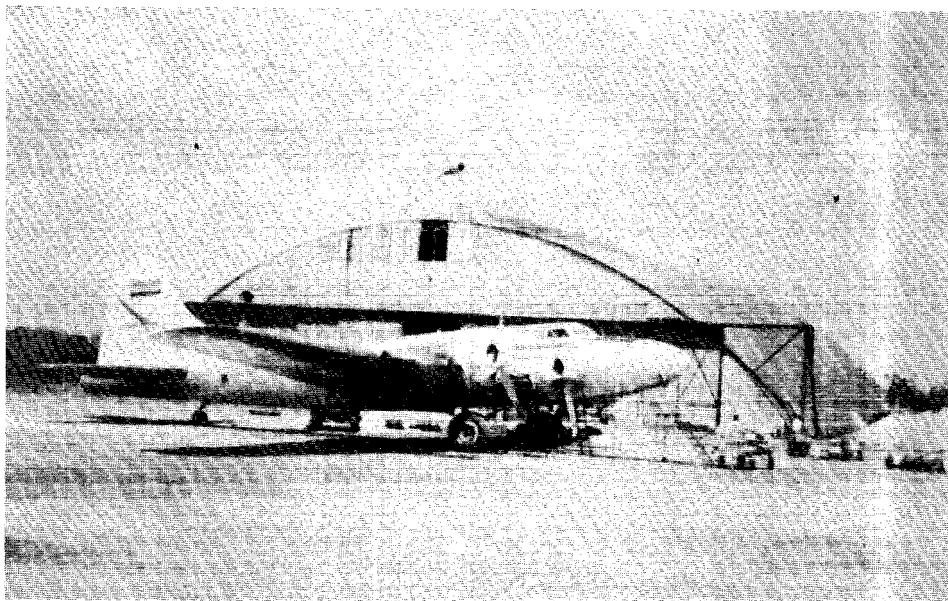


Figure 147. Lloyd Aéreo Boliviano converted B-17G aircraft at Trinidad Airport. Beef carcasses are flown from Trinidad to La Paz.

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an irregular carrier, principally carrying airplane engines to Miami for maintenance. TABSA's aircraft are used domestically to transport meat from the Beni area to La Paz.

Light planes may be chartered locally for flights to the many landing strips which are too small or too poorly maintained to handle cargo transports (Figure 148). Seaplanes are also employed, landing on the rivers in the northern lowlands (Figure 149). As of March 1967, 31 small companies and individuals offered air taxi service. Most operators have a single light plane but a few have two or three aircraft.

Airfields and landing sites are well distributed over the country. More than 300 have been reported, but many are unconfirmed; the USAF Aeronautical Chart and Information Center lists 70 operational airfields (see Map 58923). Thirty-one airfields receive scheduled commercial flights.

The El Alto Airfield (La Paz) is the only airfield in Bolivia capable of handling jet traffic. Braniff International schedules Boeing 707's and Douglas DC-8's to El Alto but the airfield is open only to daylight jet service. (No Bolivian airfield is equipped for night operation.)

Only El Alto, Cochabamba, and El Trompillo (Santa Cruz) airfields have permanent-surfaced runways. Most operational airfields have a single runway with either gravel or sod surface (Figure 150). They lack drainage and are closed to traffic after heavy rains. Operations on the Altiplano are further limited by altitude. Relatively longer runways are required for aircraft to handle comparable gross takeoff and landing weights than at lowland airports.

Few navigational aids are available. Air-to-ground radio facilities are available at about 40 airfields; nondirectional radio beacons at 21 airfields. Support and service facilities are generally limited or lacking at all but the three largest airfields.

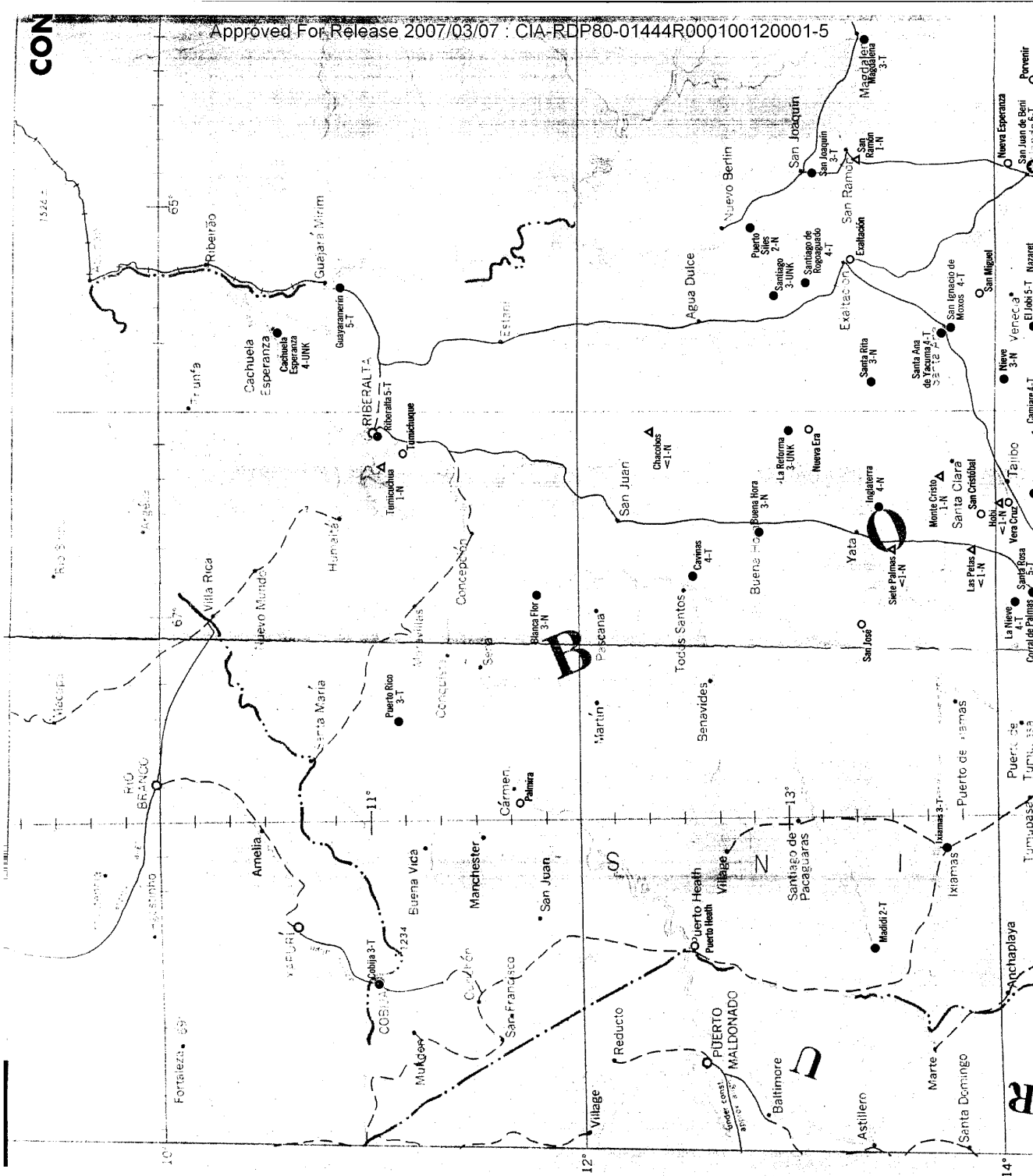
## 6. Cross-Border Movement

Bolivia is a landlocked country bounded by Peru, Chile, Argentina, Paraguay, and Brazil. The boundaries extend through sparsely populated areas that are generally lacking in good access routes. Rugged terrain and/or natural vegetation would restrict cross-border movement along many sectors. Borders are not patrolled effectively and smuggling is a local commonplace. Customs checks are made at the

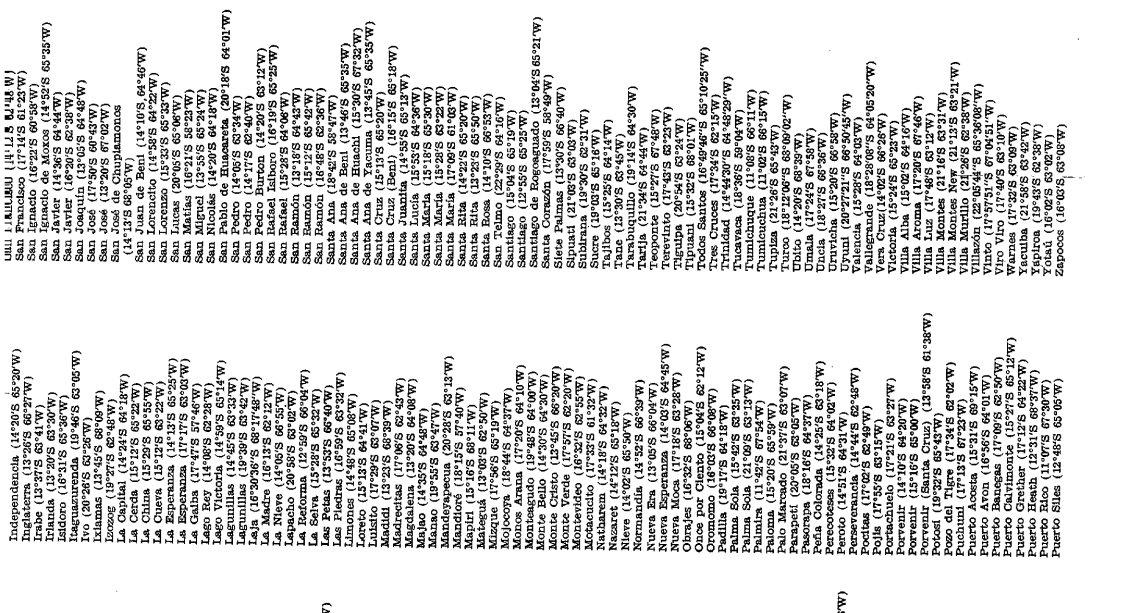


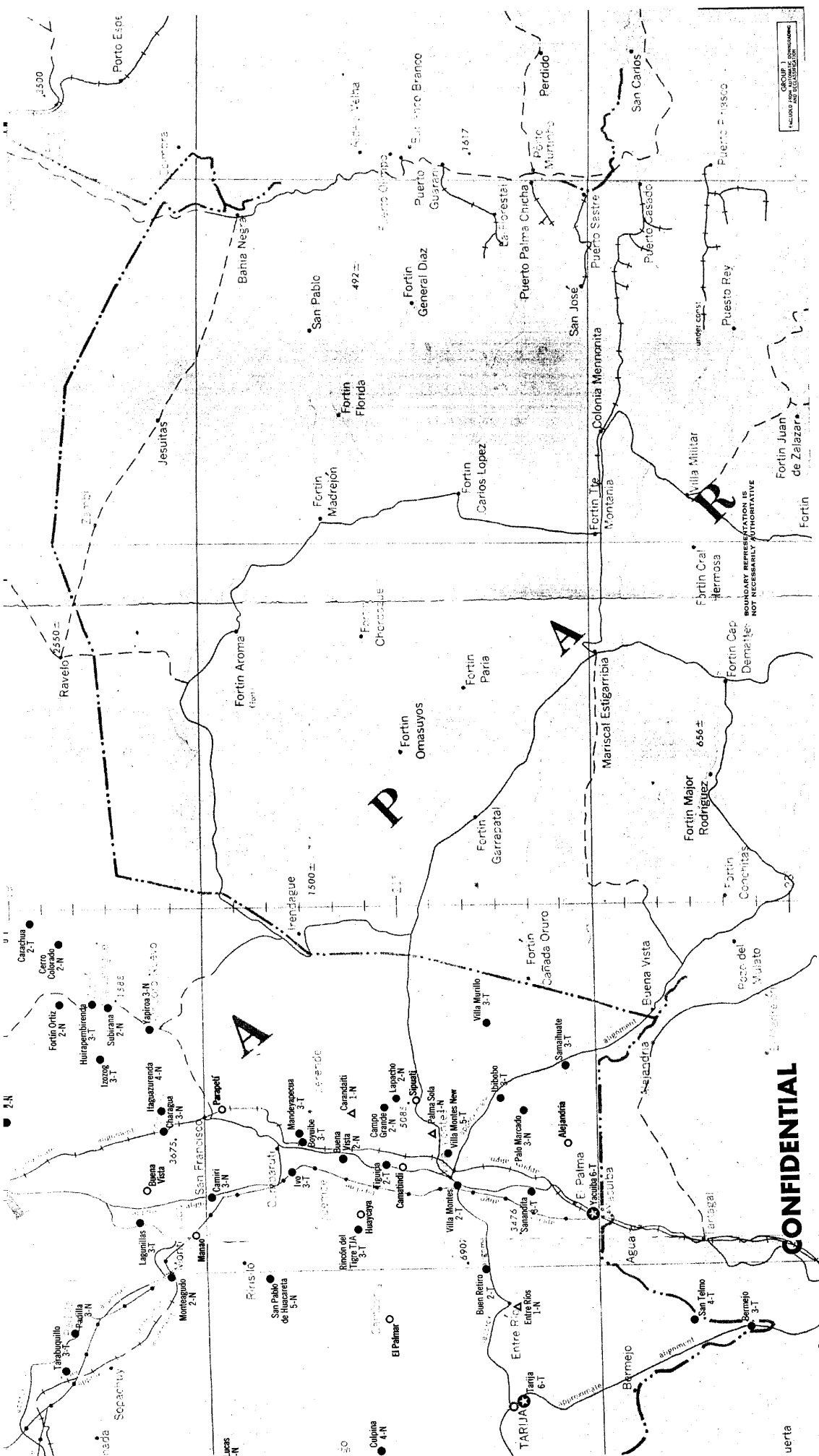
Favorita (14°15'S 66°58'W)  
Florida (16°34'S 62°49'W)  
Fortín Ortíz (19°15'S 62°30'W)  
Fortín Parada (16°40'S 62°50'W)  
General Saavedra (17°15'S 63°13'W)  
Guabrú (17°17'S 63°17'W)  
Guamaco (15°38'S 63°08'W)  
Guayay (15°38'S 67°51'W)  
Guaymarín (10°50'S 65°23'W)  
Gulf (18°02'S 62°55'W)  
Gulf (14°16'S 64°52'W)  
Habana (14°01'S 66°26'W)  
Holanda (15°37'S 65°39'W)  
Huncaraje (13°32'S 63°45'W)  
Huncaraje (13°32'S 63°45'W)











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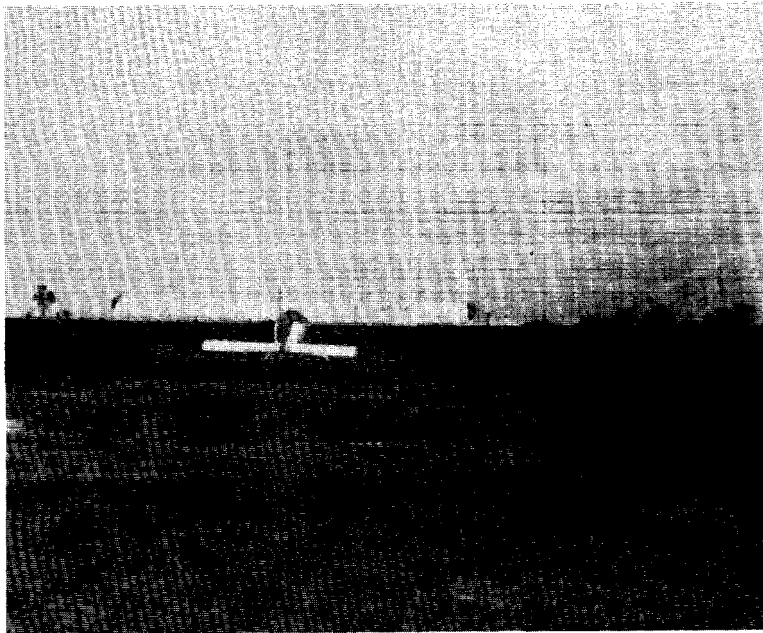


Figure 148. Landing strip for light aircraft.



Figure 149. Seaplane  
landing dock on Rio Beni.

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principal border crossing points. Bolivian customs authorities have cooperative jurisdiction with the Army at points along the land frontier and with the Navy on frontier rivers and Lago Titicaca. The Army is generally responsible for Bolivia's internal security, the Navy for reconnaissance and control of the waterways. The latter's capability for performing that function is negligible. The Guardia Nacional de Seguridad Pública performs the police function within towns.

The principal routes across the Bolivia-Peru border consist of the Río Madre de Dios and Lago Titicaca waterways; the Guaqui-La Paz Railway, which connects at Guaqui with a railroad ferry across Lago Titicaca to Puno, Peru; an all-weather road from La Paz to Puno via Desaguadero; and an alternate seasonal road from La Paz to Puno via Copacabana (16°10'S 69°05'W), requiring ferry passage between San Pedro (16°13'S 68°51'W) and Tiquina (16°13'S 68°52'W) (Figure 151). A new road leads to Cuzco, Peru, from Puerto Maldonado (12°36'S 69°11'W), the main Peruvian port on the Río Madre de Dios waterway. This road is passable only in the dry season between Puerto Maldonado and Quince Mil (13°16'S 70°38'W) and is restricted to one-way traffic between Quince Mil and Urcos (13°42'S 71°38'W) on weekdays. The direction of traffic flow is reversed on alternate weekdays, and two-way traffic is permitted on Sundays.

Numerous foot trails, known to local inhabitants, lead across segments of the border on the Altiplano and in the section of the northern lowlands situated north of the Río Madre de Dios. Small streams, such as the Río Heath, can be used during the rainy season for movement by dugout canoe across or along some parts of the border in the northern lowlands. Rugged terrain and dense vegetation restrict movement considerably in the mountainous region between the Altiplano and the northern lowlands.

Railroads serve as the principal routes across the Bolivia-Chile border. The line from La Paz to Arica, Chile, crosses the frontier near Charaña (17°36'S 69°28'W), and the line to Antofagasta, Chile, crosses the border near Oyagüe (21°14'S 68°16'W).

Seasonal tracks or trails that are impassable much of the time cross the Bolivia-Chile border at various points, but only a few serve more than the local area. Significant tracks, which interconnect with the main road network, cross the border at points near the towns of Charaña and Bueno Vista (ca. 19°56'S 68°32'W) and via the Portezuela de Silala,

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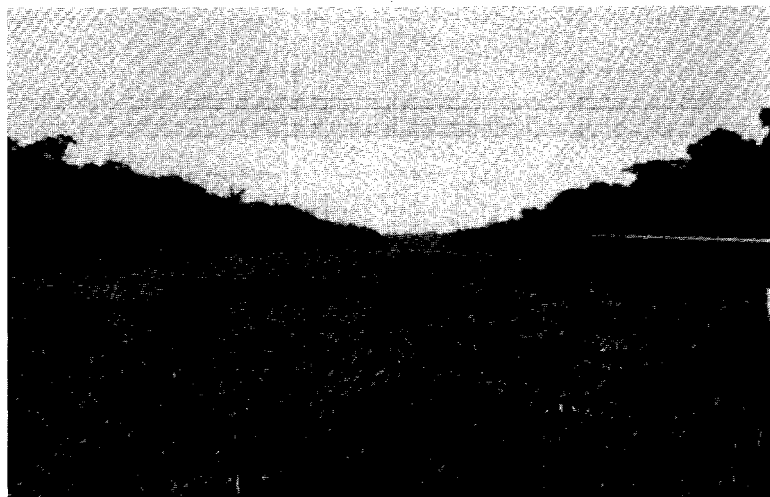


Figure 150. Sod landing strip at Puerto Villaroel.

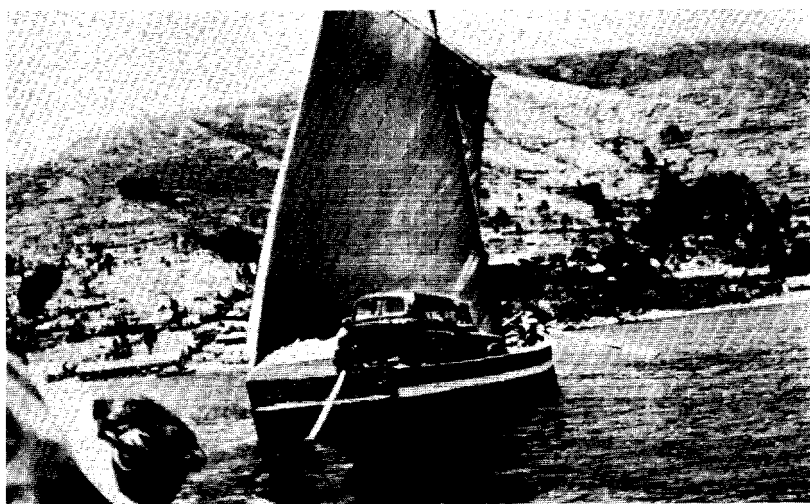


Figure 151. Auto ferry crossing Tiquina Straits.

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Portezuela Linzor, and Portezuelo del Panizo mountain passes (22°01'S 68°02'W; 22°11'S 67°57'W; and 22°24'S 67°56'W, respectively). Movement to the frontier is restricted over a broad area by the extensive salt flats of Uyuni and Coipasa. Persons thoroughly familiar with the salt flats regularly drive vehicles across them; reportedly, many carry contraband goods across the Chilean border.

Many political exiles are reported to have returned illegally to Bolivia by taking the train from Arica, Chile, to the last station before crossing the Bolivian border, proceeding across the border on foot through nearby hills, and then boarding another train for La Paz. Contraband goods have been brought into Bolivia with little difficulty on the Arica-La Paz train. This situation may change as the result of a 1967 law redefining traffic in contraband as a crime rather than a misdemeanor and imposing severe penalties on contraband activities.

Two railroad lines and three roads provide the main access routes to the Bolivia-Argentina border. A railroad line from La Paz crosses the border at Villazón, and the railroad from Santa Cruz crosses at Yacuiba. Alternate routes of the Pan American Highway in southern Bolivia extend to the Argentine border at Villazón and at the international bridge near Pozos Bermejo (ca. 22°44'S 64°22'W). At these points they connect with all-weather roads to Jujuy and Buenos Aires, Argentina. Segments of the Pan American Highway within Bolivia are classified as all-weather roads near the border, but some sections through mountainous terrain to the north are passable only in dry weather. The third access road to the Argentine border stretches from Santa Cruz to Yacuiba. Little more than a seasonal track along most sectors, it bears relatively heavy truck traffic during the dry season. A trail branches off this road at Campo Pajoso (21°55'S 63°40'W) and leads east-southeastward across the lowland to the Argentine border at D'Orbigny.

Contraband traffic in cocaine reportedly moves from Cochabamba by both air and road to the Argentine border near Pozos Bermejo, and from Santa Cruz by road and railroad to Yacuiba.

The only routes to the Bolivia-Paraguay border consist of unimproved seasonal tracks and trails which are impassable during the rainy season and rough and dusty during the dry season. Their exact alignment is uncertain, but some of the more significant lead from Villa Montes to Cañada Oruro (21°40'S 62°24'W), Paraguay; from Villa Montes to 20 de

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Octubre (ca. 21°03'S 62°15'W); from Boyuibe (20°25'S 63°17'W) to Fortín Villazón (20°35'S 62°16'W), Paraguay; and from Charagua (19°48'S 63°13'W) to Fortín G. Mendoza (20°07'S 61°55'W), Paraguay. The tracks from Boyuibe and Charagua connect with the seasonal Trans-Chaco road across the Paraguayan Gran Chaco.

The principal transportation links between Bolivia and Brazil are the Corumbá-Santa Cruz Railway and the several navigable waterways that extend along segments of the border. The railroad is in poor condition, but provides weekly passenger service, of sorts, to Corumbá, Brazil, and thence by a Brazilian railroad line to São Paulo. The railroad reportedly has been used for smuggling contraband -- narcotics, arms, ammunition, and various luxury goods -- into and out of Bolivia. Some items are shipped disassembled and concealed among legitimate goods; others are carried by passengers. Upon entering Bolivia the stop for a customs check is made at the railroad station serving Puerto Suárez -- about an hour's ride from Corumbá. A smuggling technique reported in 1966 was for youths carrying parcels to leap off the train as it slowed down before arriving at the station. They disappeared into the forest and, after the customs check, reboarded the train beyond the town.

During the rainy season, ferry service by steam launch is maintained between Puerto Suárez, on the Laguna Cáceres, and Corumbá, on the Río Paraguay.

The Río Mamoré and its tributary, the Río Iténez (Río Guaporé in Brazil), extend along the Bolivia-Brazil border for a combined distance of about 660 miles. These rivers are navigable by shallow-draft launches from Guayaramerin, on the Mamoré, upstream along the border for a distance of 625 miles, and thence on into Brazil to the head of navigation on the Río Guaporé at the town of Mato Grosso.

Bolivian products, such as cattle, rubber, and Brazil nuts, are smuggled across the Río Mamoré to Brazil to avoid payment of duties. Most of the contraband reach the Brazilian town of Guajará-Mirim, across the river from Guayaramerin, both a river port and the terminus for the Madeira-Mamore Railroad. This antiquated railroad is used for the transshipment of goods between Pôrto Velho and Guajará-Mirim, bypassing the unnavigable reaches of the Mamoré and Madeira rivers. Narcotics and contraband reportedly move via the railroad to Pôrto Velho, where they are placed aboard ocean-going vessels. Plans have been made to discontinue service on the railroad and to remove the tracks when a highway is

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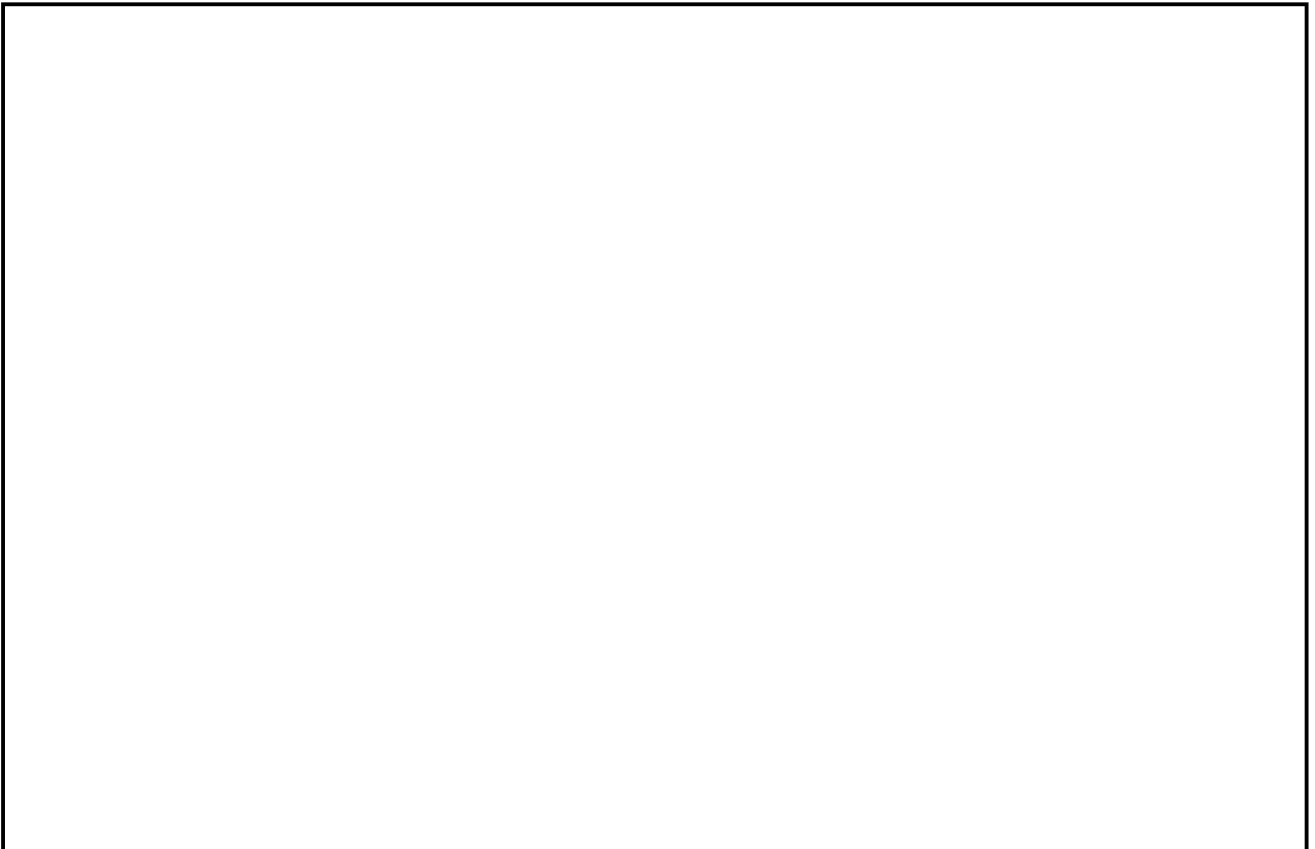
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completed along the same route. Some sections of the existing dirt road probably are traversable only in dry weather.

A seasonal dirt road connects Guayaramerin with Riberalta and Cachuela Esperanza on the Río Beni, affording a transshipment route from these small river ports to the Río Mamoré and across it to the terminus of the Madeira-Mamoré Railroad.

Discontinuous segments of the Río Abuná form part of the northern border of Bolivia with Brazil. The river is navigable by small craft from its mouth to the rapids at mile 13, and from the rapids on upstream for 227 miles to Santa Rosa (10°36'S 67°25'W).

Río Acre forms the boundary along the 77-mile stretch between Cobija (11°02'S 68°44'W) and Iñapari (10°41'S 67°50'W). The river is navigable for craft drawing up to 3 feet and affords year-round access to the Amazon River without transshipment. A seasonal dirt road connects Porvenir (11°15'S 68°41'W), on the Río Tahuamanu, with Cobija. Small boats ferry passengers across the Río Acre from Cobija to the Brazilian town of Brasiléia and from Iñapari to Seringal Paraguaçu. The river can be forded at both points during the dry season.



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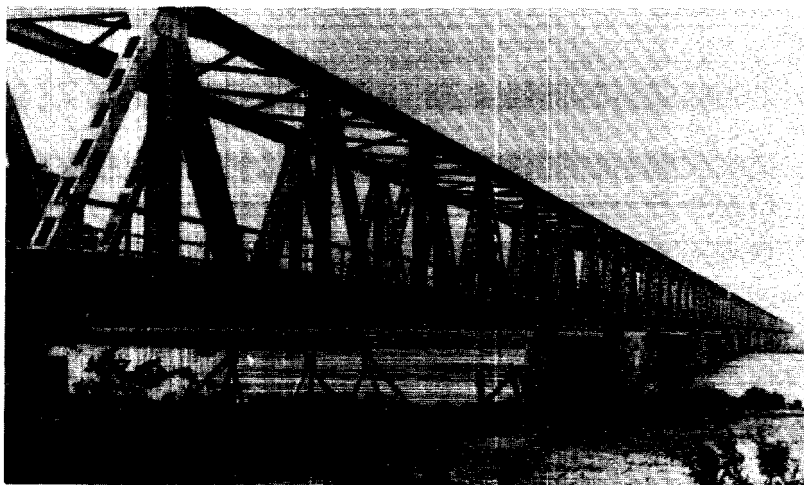


Figure 152. Multispan railroad bridge across Río Grande near Puesto de Pailas.

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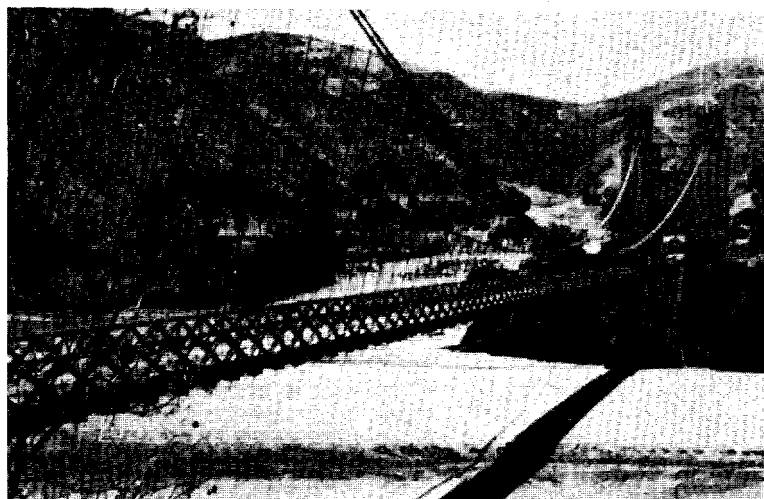


Figure 153. Narrow suspension bridge over Río Pilcomayo near Millares.



Figure 154. Small suspension bridge on the Cochabamba-Todos Santos road.

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Table 2

Characteristics of Navigable Rivers			
<u>Main River</u>	<u>Tributary</u>	<u>Secondary Tributary</u>	<u>Tertiary Tributary</u>
			<u>Navigable length (miles)</u>
Río Acre			77
			Navigable throughout its length in Bolivia for craft with drafts up to 3 feet; affords year-round access to the Amazon.
Río Abuná			240
			Navigable throughout the year for craft with drafts up to 3 feet from mouth to rapids at mile 13 and upstream from rapids to Santa Rosa (mile 240).
Río Beni			580
			Navigable by launches with drafts up to 2.5 feet throughout the year from Cachuela Esperanza (mile 20) to Rurrenabaque (mile 600); navigable by craft with drafts up to 6 feet during the rainy season.
	Río Ortón		175
			Navigable by small, flat-bottomed boats throughout its length.
	Río Tahuamanu		225
			Navigable to the Peruvian border; minimum depth of 3 feet at low water.
	Río Manuripi		175
			Navigable to the Peruvian border.
	Río Madre de Dios		320
			Navigable to Puerto Maldonado, Peru, by shallow-draft steam launches; however, only very shallow-draft craft can negotiate the rapids near mile 200 during periods of low water.

Table 2 (Continued)

<u>Main River</u>	<u>Tributary</u>	<u>Secondary Tributary</u>	<u>Tertiary Tributary</u>	<u>Navigable length (miles)</u>	<u>Comments</u>
Río Mamoré				602	Navigable by river steamers from Guayaramerin (mile 35) to the mouth of the Río Ibare, at mile 475, during the season of high water; navigable by shallow-draft launches of 40- to 60-ton capacity from mile 35 to the confluence of the Río Chaparé and Río Ichilo throughout the year.
	Río Iténez			500	Navigable by shallow-draft launches throughout its extent in Bolivia and upstream to Mato Grosso, Brazil.
		Río Itonamas		300	Navigable by light-draft vessels to San Pablo (mile 300).
			Río Machupo	233	Navigable by shallow-draft craft for 233 miles.
		Río Baures	Río Blanco	342	The Río Baures and its tributary, the Río Blanco, are navigable by light-draft vessels for a combined distance of 342 miles upstream from mouth of the Río Baures.
		Río Paraguá		200	Navigable by light-draft vessels upstream for a distance of at least 200 miles.
	Río Yacuma			264	Navigable by shallow-draft vessels for 264 miles; used primarily for navigation to Santa Ana (mile 150.)

Table 2 (Continued)

<u>Main River</u>	<u>Tributary</u>	<u>Secondary Tributary</u>	<u>Tertiary Tributary</u>	<u>Navigable length (miles)</u>	<u>Comments</u>
	Río Ibare			15	Navigable throughout the year to Puerto Ballivián (mile 10) and during the rainy season to Trinidad (mile 15).
	Río Sécure			150	Navigable by motorboats with drafts up to 2 feet to Puerto Marquez (mile 150) throughout the year; navigable by small river steamers during the high-water period; current is strong and many sharp bends are difficult to navigate upstream from mile 28.
		Río Isiboro		150	Navigable by motorboats to Puerto Patiño (mile 150) during the rainy season; navigable by canoes throughout the year.
		Río Ichoa		80	Head of navigation unknown; navigable by small motorboats to mile 80, and probably for some distance farther upstream.
	Río Grande			95	Navigable to La Estrella (mile 95); riverbed is badly silted farther upstream, where only certain stretches are navigable by canoes and small flat-bottomed boats.
		Río Yapacani		145	Navigable to San Carlos (mile 145), but limited during the dry season to flat-bottomed barges drawing about 1 foot.
			Río Palometillas	75	Navigable by small flat-bottomed barges for about 75 miles upstream from its mouth.

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Table 2 (Continued)

<u>Main River</u>	<u>Tributary</u>	<u>Secondary Tributary</u>	<u>Tertiary Tributary</u>	<u>Navigable length (miles)</u>	<u>Comments</u>
		Río Piray		30	Navigable by small flat-bottomed barges upstream from a point near its mouth to Cuatro Ojos; obstructions at mouth block entrance to the Río Grande.
	Río Ichilo			175	Navigable by small craft to Puerto Grether (mile 175) throughout the year; navigable by large river steamers to mile 110 throughout the year.
	Río Chaparé			100	Navigation unreliable; steamers navigate to Todos Santos (mile 100) during parts of the year; sometimes even small launches must unload and reload several times per trip to pass shoals and obstructions.
Río Paraguay and connections				37	Craft of 8-foot draft can navigate 30-mile reach of river along Bolivian border (mile 770 to mile 800); Brazilian sector of river accessible at mile 933 via a stream from Laguna Cáceres; the stream, 7 miles long, is navigable by steam launch during rainy season, but navigation is limited to craft of 2- to 3-foot draft in dry season; Puerto Suárez, on Laguna Cáceres, can not be reached during the dry season.
Río Pilcomayo				110	Reportedly navigable from Argentine border to Villa Montes during the rainy season.
Río Bermejo			-227-	65	Reportedly navigable from Argentine border to Bermejo -- presumably only during rainy season.

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Table 3  
Selected Bridges

<u>Location</u>	<u>Length (feet)</u>	<u>Remarks</u>
<u>Road Bridges</u>		
Río Azero, near Chincana (19°37'S 64°07'W)	236	Narrow steel suspension bridge
Río Chico, near Villa Abecia (20°59'S 65°22'W)	113	Narrow bridge
Río Desaguadero, at Peruvian border (16°34'S 69°20'W)	164	Steel pilings; reinforced concrete stringers; capacity, 20 short tons
Río Grande, near La Barca (18°34'S 65°08'W)	577	Steel suspension bridge, known as Acre Bridge
Río Grande de Cinti, near Palca Grande (20°45'S 65°16'W)	257	Single-span, steel suspension bridge
Río Parapetí, near Camiri (20°02'S 63°31'W)	131	Single-span, steel suspension bridge; low capacity
Río Pilcomayo, near Millares (19°21'S 65°13'W)	577	Single-span, steel suspension bridge
Río Pilcomayo, near Villa Montes (21°16'S 63°30'W)	Unknown	Three-span suspension bridge
Río Pojo, near Pojo (17°45'S 64°48'W)	234	Five-span, reinforced concrete bridge; masonry piers and abutments
Río San Juan, near El Puente (21°17'S 65°17'W)	262	Single-span, steel suspension bridge

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## S-E-C-R-E-T

Table 3 (Continued)

<u>Location</u>	<u>Length (feet)</u>	<u>Remarks</u>
Río Tumusla, near Tumusla (20°31'S 65°39'W)	315	Narrow bridge
Río Yara, near Caranavi (15°46'S 67°36'W)	180	Single-lane, two-span steel pony, half-through truss bridge; wood deck; 15-ton capacity
<u>Railroad Bridges</u>		
Quebrada de Chocaya, near Atocha (20°57'S 66°14'W)	Approx. 145	Eight-span bridge
Río Desaguadero, near Calacoto (17°15'S 68°37'W)	360	Structural data unavailable
Río Grande, near Puesto de Pailas (approx. 17°40'S 66°47'W)	5,250	Multispan, steel, through truss bridge
Río Mulatos, near Río Mulatos (19°42'S 66°47'W)	Approx. 180	Ten-span bridge
Río Parapetí, near San Francisco (20°01'S 63°09'W)	820	Nine-span bridge
Río Pilcomayo, near Villa Montes (21°16'S 63°29'W)	1,390	Seven-span, steel, through truss bridge
Río Poopó, near Poopó (18°23'S 66°59'W)	250	Thirteen-span concrete bridge
Río Tapacari, near Parotani railroad sta- tion (17°34'S 66°20'W)	Approx. 885	Fifty-four-span bridge
Río Viscachani, near Ayoayo (17°07'S 68°00'W)	Approx. 100	Single-span bridge

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## C. Telecommunications

### 1. General

Telecommunications facilities and services in Bolivia are poor even by Latin American standards. The existing communications networks are often overtaxed, and many areas of Bolivia have no telecommunications service. The only extensive wireline network is confined primarily to the Altiplano in the southwestern third of the country. The rest of the country is dependent upon high-frequency (HF) radio for long distance communications. Although both government and privately owned common carrier systems exist, many business firms have found it necessary to establish and maintain their own radio systems. International communications links consist of point-to-point radio and wirelines to neighboring countries.

Radiobroadcasting service is provided by both government and private organizations. Most of the transmitters are very low powered and have only a small reception radius. While the Bolivian government does not regulate private broadcasting closely, anti-government propaganda is not permitted.

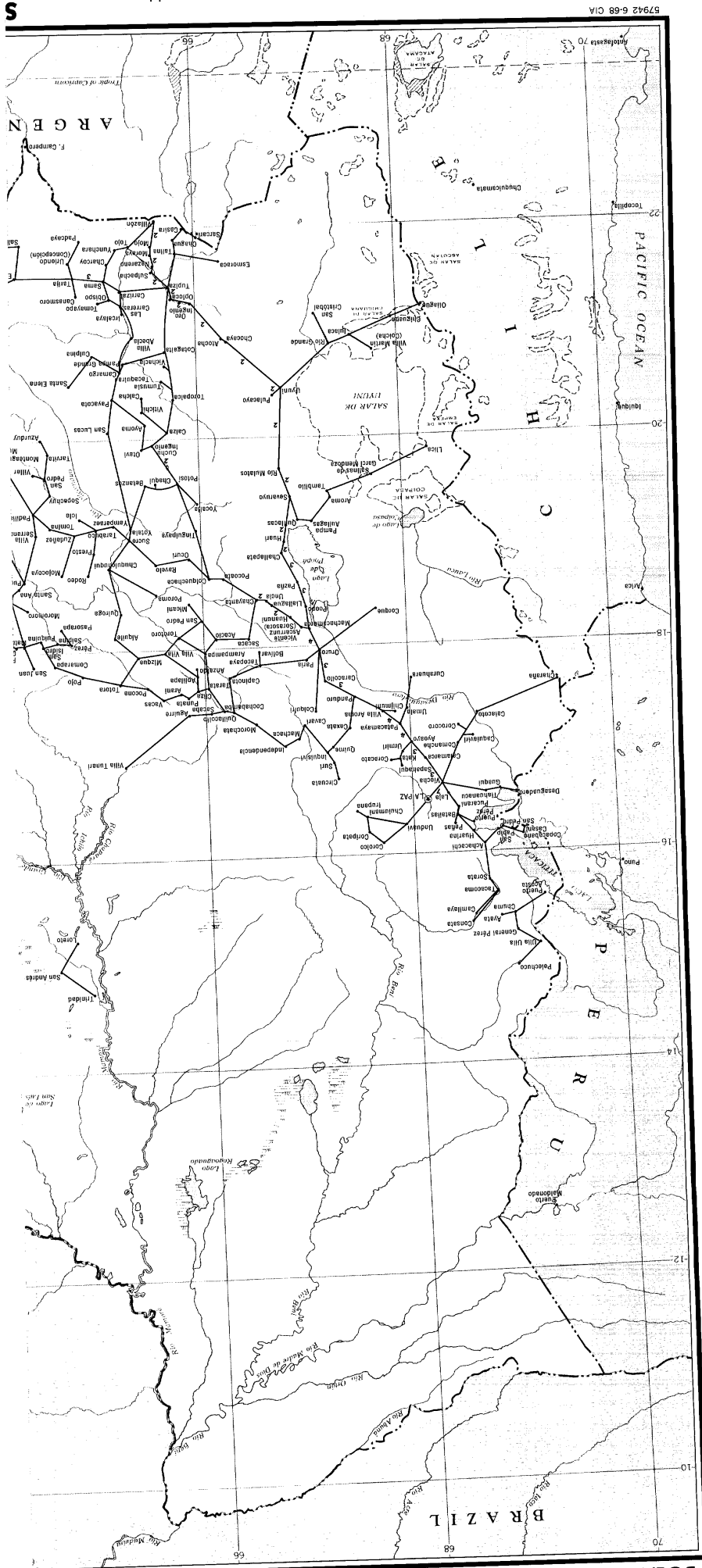
### 2. Telephone and Telegraph

#### a. Domestic

Bolivia has no microwave or cable systems and, thus, relies exclusively on wirelines and HF radio for domestic communication. Open wirelines are extensive throughout the southwestern plateau area, connecting about 700 towns (see Map 57942), but the quality of service is poor and outages of 25 percent are common. Most of the wirelines provide only a single circuit, but a few major links (e.g., La Paz to Oruro) have multi-channel capacity. The country's wiretelegraph system is operated by the state telegraph network (Red Telefónica del Estado -- RTE) and controlled by the General Directorate of Telecommunications (Dirección General de Telecomunicaciones -- DGT), a government ministry. The small long-distance telephone system which uses both open wirelines and HF radio is operated by the National Telecommunications Enterprise (Empresa Nacional de Telecomunicaciones -- ENTEL). According to a government decree of 1965, ENTEL is scheduled to take over, integrate, and upgrade all non-military government telecommunications.

Four separate HF radiotelegraph networks provide common carrier service throughout Bolivia. In many regions of the

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BOLIVIA: Common Carrier Open-wire Communications Network, June 1968

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## S-E-C-R-E-T

country, these networks provide the only service available. The DGT operates a nationwide HF radio network primarily for government use. Two private firms, the International Company of Bolivian Radio (Compañía Internacional de Radio Boliviana -- CIRBOL) and the Interdepartmental Radioelectric Service (Servicio Radioeléctrico Interdepartmental -- SERVAL), also operate widespread HF radiotelegraph networks. Another private company, Radio Rural, operates an HF radiotelegraph system with service confined to the Santa Cruz area.\*

There are only about 25,000 telephones in Bolivia, nearly all of which are concentrated in seven cities and used only for local service. More than half of the telephones are located in La Paz alone, and the rest are spread thinly among Cochabamba, Santa Cruz, Oruro, Sucre, Potosí, and Tarija. Most of the phones are used by private subscribers, but about 4,000 are located in various government offices.

b. International

Bolivia's international communications are limited to wirelines and HF point-to-point radio, linking it with surrounding countries and New York. All American Cables and Radio Company (AACR -- an ITT subsidiary) has a wiretelegraph circuit from La Paz to Oruro to Iquique, Chile. The government (RTE) has wirelines in some border areas which provide connections into neighboring countries. Principal among these are lines from Villazón to La Quiaca, Argentina; from Yacuiba to Pocitos, Argentina; from Uyuni to Antofagasta, Chile; and from Copacabana to Puno, Peru.

International HF radio circuits are more numerous. A La Paz newspaper, Empresa Editora "El Diario", S.A., receives radioprinter, radiotelephone, and radiophoto services from the United Press International. La Paz also is served by single-channel common carrier telephone circuits with Santiago and with Buenos Aires. Radiotelegraph circuits provide the largest number of international links, as shown in the following tabulation.

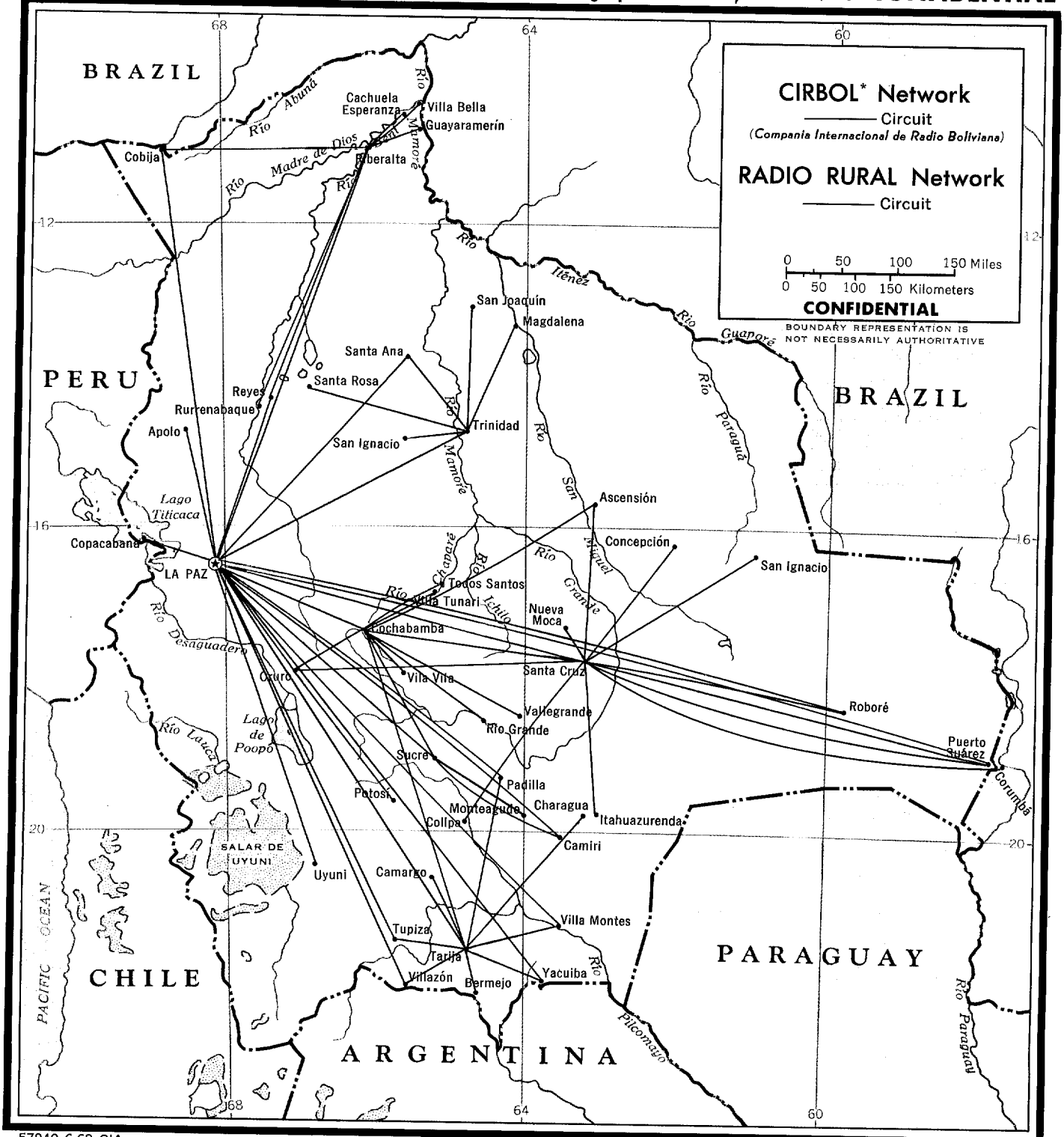
International HF Radiotelegraph Circuits

<u>Bolivian Terminal</u>	<u>Number of Circuits</u>	<u>Foreign Terminal</u>	<u>Ownership</u>
La Paz	1	New York, U.S.A.	Cirbol
La Paz	1	Arequipa, Peru	GOB**

\* See Maps 57940 and 57938

\*\*Government of Bolivia

**BOLIVIA: Common Carrier High-frequency (HF) Radiotelegraph Networks, June 1968** **CONFIDENTIAL**



57940 6-68 CIA

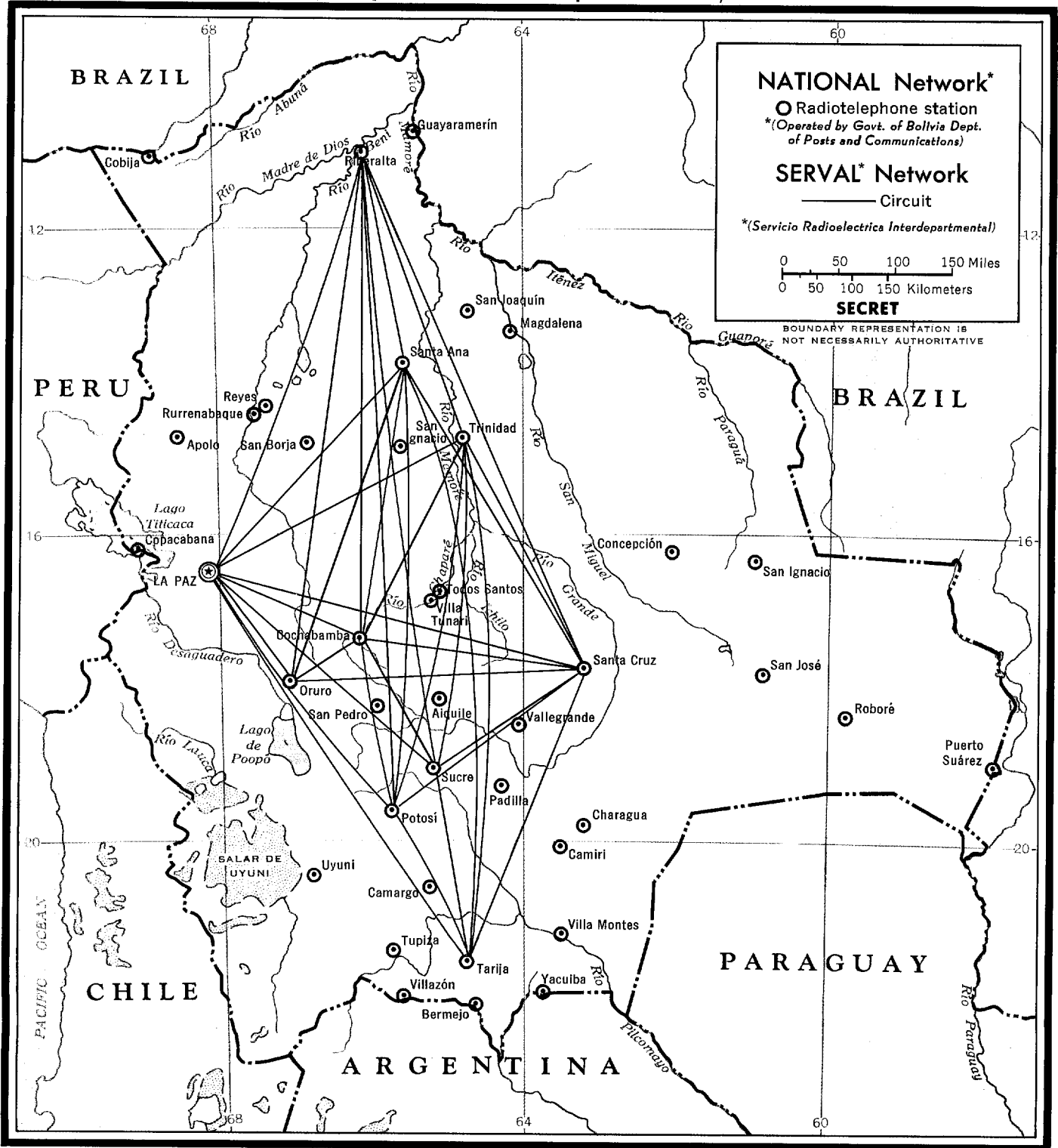
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AND DECLASSIFICATION



**BOLIVIA: Common Carrier High-frequency (HF) Radiotelephone Networks, June 1968**

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## S-E-C-R-E-T

<u>Bolivian Terminal</u>	<u>Number of Circuits</u>	<u>Foreign Terminal</u>	<u>Ownership</u>
La Paz	3	Buenos Aires, Argentina	Cirbol
La Paz	4	Lima, Peru	Cables West Coast
La Paz	1	Montevideo, Uruguay	GOB*
La Paz	1	Santiago, Chile	Cirbol
La Paz	N.A.**	Asunción, Paraguay	GOB*
Cochabamba	N.A.**	Arequipa, Peru	GOB*
Riberalta	N.A.**	Puerto Maldonado, Peru	GOB*
Riberalta	N.A.**	Pôrto Velho, Brazil	GOB*

3. Broadcasting

Bolivia has 63 licensed radiobroadcasting stations. The two highest-powered stations (20kw and 10kw) are located in La Paz and are operated by the government. The remainder are privately owned. The government does not exercise its right to regulate the activities of private stations on a day-to-day basis, but it does not tolerate the broadcasting of anti-government propaganda. Most unlicensed stations appear to have been effectively silenced as a result of government crackdowns.

Of the 63 licensed stations, about half broadcast simultaneously on both the medium and shortwave bands, and two of them also simulcast FM signals from La Paz. The remaining stations broadcast only on the medium-wave band. Only 7 of the 61 private stations have as much as 5 kw of power; all of the others operate at 1 kw or less. The two government-owned transmitters have their own independent power supply, but all the private stations are dependent on public power.

More than three-quarters of the country's radiobroadcasting stations are concentrated in only four cities: 27 in La Paz, 9 in Cochabamba, 7 in Santa Cruz, and 5 in Oruro. There are also radiobroadcasting stations in the following towns: Trinidad, Concepción, San Jose', Villa Montes, Tarija, Potosí, Sucre, and Llallagua. There are no broadcasting networks as such in Bolivia, but stations occasionally pick up and transmit programs originated by other stations. For the country as a whole, there are an estimated 300,000 radio receivers -- the equivalent of one set for approximately every 12 persons. All receivers must be imported since Bolivia does not manufacture this type of equipment.

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\* Government of Bolivia

\*\*Information not available but probably single circuit.

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There are no international radiobroadcasting stations in Bolivia and television broadcasting is still in the discussion stage.

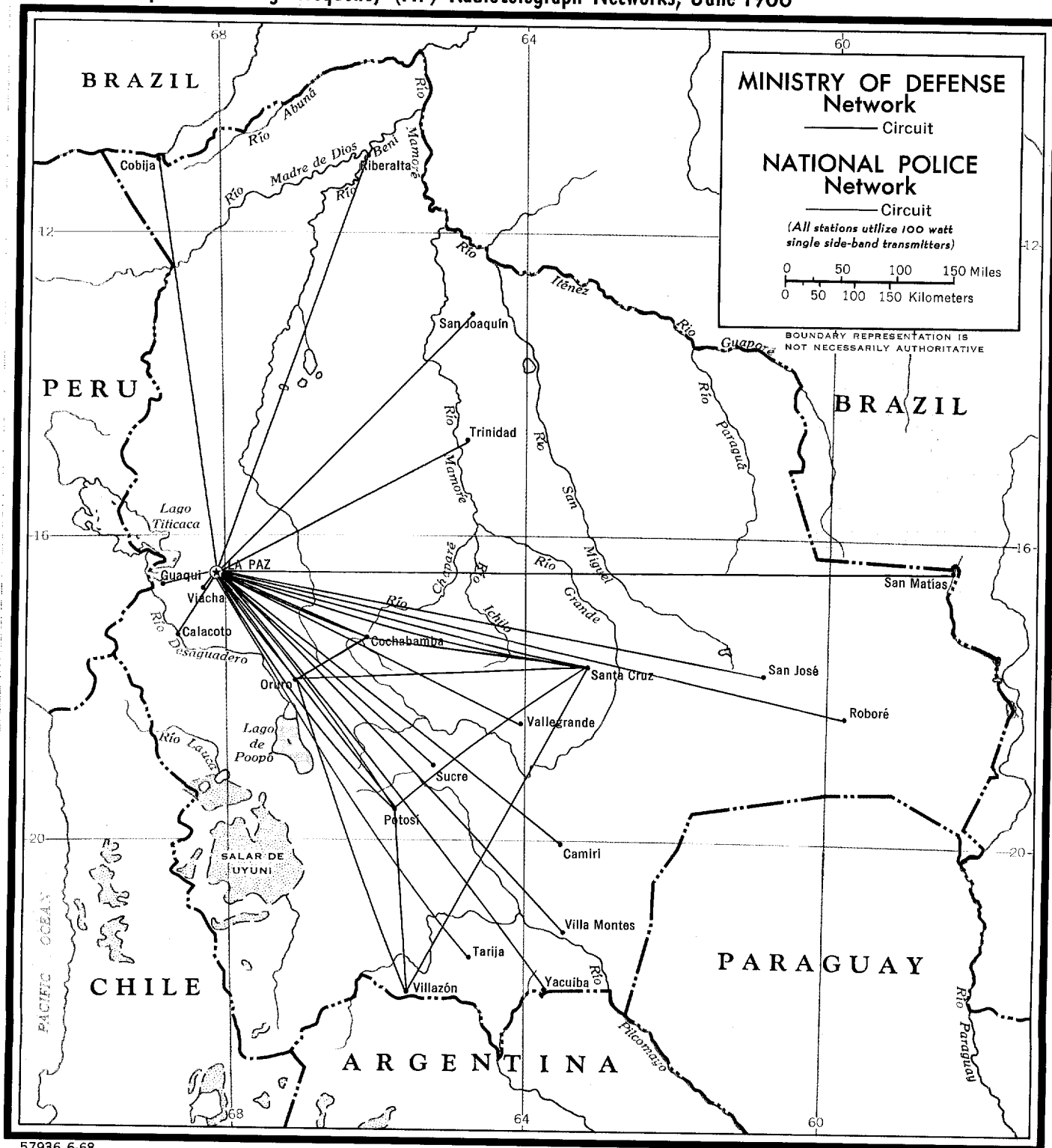
4. Special-Purpose Systems

Some of the most effective point-to-point radio systems in Bolivia are those operated by certain government and private entities to service their own specialized needs. The Bolivian army operates a network of at least 22 fixed HF radio stations. Most of the outstations on this network can communicate directly with La Paz by either voice or telegraph, but not both simultaneously. With assistance from USAID, the Bolivian National Police has established a voice radio network equipped with 100-watt, single sideband transceivers. This net links La Paz with Oruro, Santa Cruz, Potosí, and Villazón (See Map 57936). Single-circuit radio telegraph networks are operated by the Bolivian railroads and the Banco Minero (Mining Bank), both state-owned. The railroad telegraph links extend along all the major railroad routes while those of the Mining Bank radiate out from the main office in La Paz to branch bank offices located in Bolivia's major mining towns. Finally, each of the two airlines serving Bolivia, the state-owned Lloyd Aero Boliviana (LAB) and Braniff International Airways, operates its own radio communications network. Available information does not indicate clearly the technical characteristics of these airlines communications facilities, but it is probable that all of them are capable of at least one manual Morse circuit.

5. Special Communications Problems and Vulnerabilities

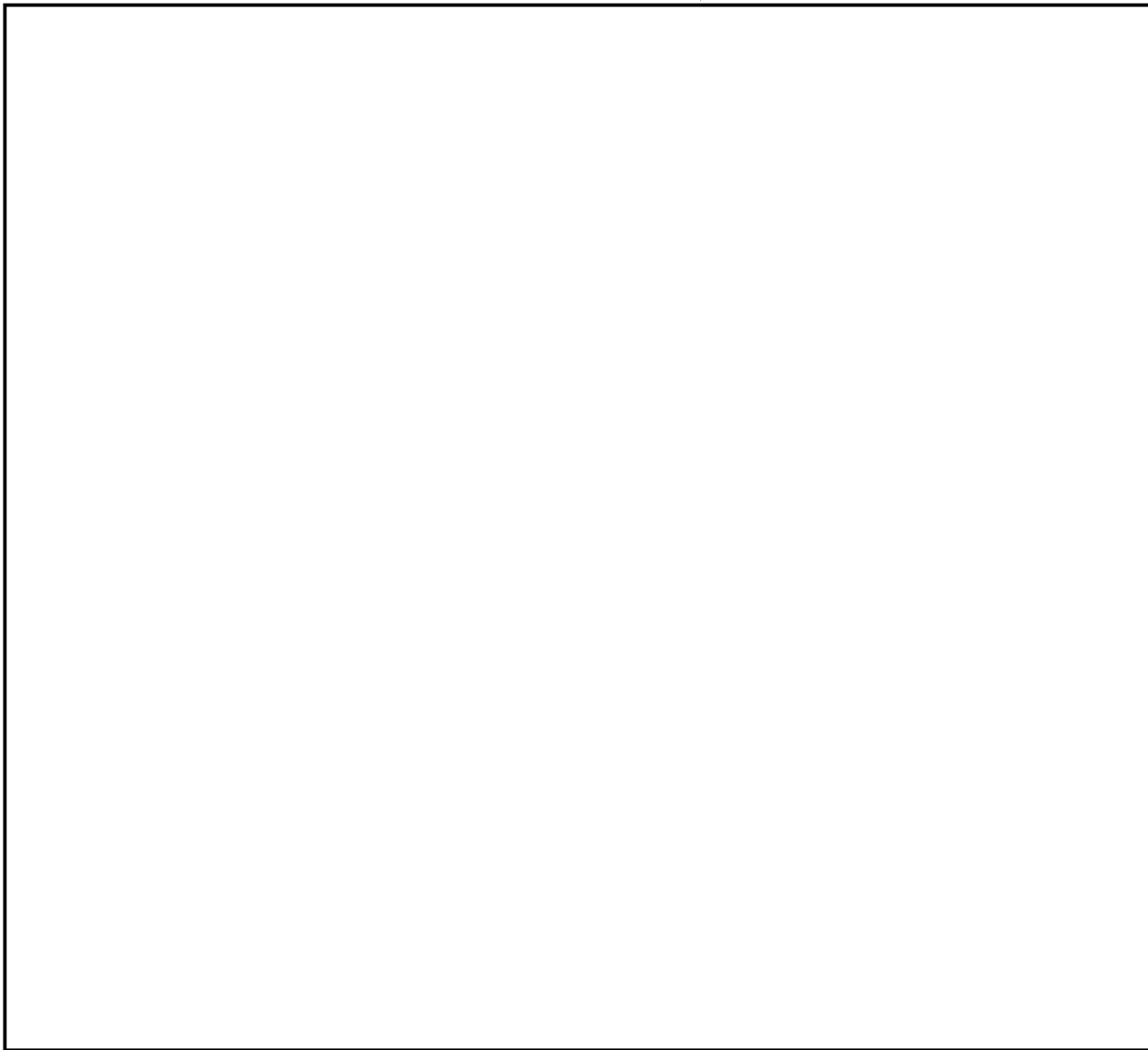
The physical environment of various regions in Bolivia can entail some unusual problems for the communicator. Electronic equipment to be used in jungle areas should be tropicalized in order to minimize the adverse effects of moisture and fungus. Even with proper equipment, strict preventive maintenance is necessary in tropical climates. Commonly used portable VHF equipment usually requires a "line-of-sight" transmission path which may be difficult to obtain in mountains. Radio signals are rapidly attenuated by dense foliage; therefore, in forest areas it is necessary to elevate antennas above the level of foliation to obtain more than a small fraction of designed transmission range. During the mid-day hours the maximum usable frequency usually falls to approximately 5 megacycles. Thus, from roughly 1100 to 1500 hours daily (times are subject to considerable variation) networks utilizing higher frequencies, such as the National Police SSB system, undergo total blackout.

# BOLIVIA: Specialized High-frequency (HF) Radiotelegraph Networks, June 1968



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#### IV. Political Dynamics

##### A. General

Bolivia's present political system represents in large measure a reaction against the social and economic order which prevailed virtually unchanged throughout the first half of the 20th century. The revolution of 1952 altered drastically the character and direction of Bolivian life. Prior to that date, Bolivia was essentially a classic feudal state in which a small white and mestizo oligarchy kept the Indian population in a condition of virtual slavery. The rapidity and totality of the transformation brought on by the revolution shook Bolivian society to its core -- the political, economic and social foundations of the traditional order were utterly destroyed and a new, vaguely defined, but totally different order was established.

As the old social structure and its political parties disintegrated, newly emerging groups filled the void. These new political parties share many qualities and attitudes in common. They differ sharply, however, as to the specific methods by which domestic reforms are to be achieved. Not only is there a lack of political consensus among the several parties but, equally important, almost every political movement has undergone a split, with the splinter parties themselves then factionalizing into right, center and left wings. The political scene is obscured by the inability of the many diverse elements to work together, and non-political organizations play important roles. The regime in power at any one point in time faces a wide spectrum of opposition parties representing all shades of political opinion. The most important political pressure groups are the military, campesinos, miners and industrial workers, and students. The middle class, not yet an important political force, is interested primarily in security, tranquility and maintenance of the status quo. The clamor of the campesinos and miners, long subordinate and impoverished, dominates the political scene. While organized labor supports the aims of the revolution, there are conflicting political factions within the movement and their loyalties are directed at individuals rather than the system of government. Labor has heavily influenced government policy. Its importance in Bolivia's power balance has made it a target group for all political parties seeking control of the government apparatus.

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Political behavior still is conditioned by traditional values and mores of Bolivian life. Provincialism, corruption, violence and inefficiency seriously limit the attainment of national goals and the satisfactory functioning of day-to-day affairs of government. An incapacity for long-range planning is another serious inhibitor to effective government. Bolivians favor a kind of order which arises out of strong central political authority. In the government this is reflected in absolute supremacy of the executive over the legislature. So long as a leader remains in undisputed command of the situation, there is little overt opposition to his decisions. Nationalism as a political ideology has great emotional appeal to most Spanish-speaking Bolivians. The national revolution, with its goals of social change, political regeneration, and economic development, is a source of inspiration to the people. The number of Bolivians who participate directly in national political life has increased greatly. This fact, and the continuing demands of the Indian and miner groups, are among the major determinants of the future course of Bolivian political development.

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B. Structure of Government

1. Central Government

The Bolivian constitution of February 1967 provides for a highly centralized form of government with separation of powers among the executive, legislative and judicial branches. Separation of powers, however, is a fiction; real authority is vested in the person of the President who serves both as head of state and of the official party. This sixteenth constitution in Bolivia's history replaced a document which the military imposed in 1965 (see Table 4).

The Executive Branch consists of the President, Vice President and the Council of Ministers (Cabinet). The President and Vice President are elected by direct universal suffrage for a term of four years, after which they must retire for four years before again being eligible for election. Both are required to be of Bolivian origin and at least 35 years of age; each must be a candidate of a legally recognized political or civic group and not have a criminal record.

The constitution gives the President broad powers and governs his relations with the legislative branch; he is charged with enforcing and implementing laws which the legislature enacts; as head of the armed forces he has the power to increase the size of forces, call up reserves, and suspend the constitutional rights of persons endangering public order; to preserve civil order he can use the "state of siege", a modified form of martial law; he administers taxes and the disbursements of revenues; he conducts foreign relations; and he supervises the municipal governments. One of the President's most important sources of strength is the power of appointment through which he exercises control over a large number of public servants at all levels of government. He appoints ministers, chief executive officers and all officials whose appointments are not delegated specifically to another branch of government.

The Legislative Branch (the National Congress) is a bicameral body composed of the Senate and Chamber of Deputies. Senators and deputies serve a four year term. The Congress fixes the number of deputies and their method of election; there are three senators from each of the nine departments, elected by direct universal suffrage. The legislature is not an important policy making body; for the most part it responds to the will of the President. The Chamber of Deputies is concerned primarily with fiscal matters; in addition to its legislative duties, the



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Senate serves as a trial court of last resort on charges brought by the Chamber of Deputies against the justices of the Supreme Court and the Attorney General. Either chamber can initiate bills; the Supreme Court can initiate legislation pertaining to legal codes; the President can initiate bills through his Ministers. When Congress is not in session, its functions are performed by a commission of congress composed of nine Senators and eighteen deputies elected by their respective houses and presided over by the Vice President.

The Judicial Branch comprises a Supreme Court, superior (district) courts, and such other tribunals as the legislature may deem necessary. The Supreme Court has a president and eleven judges who staff the court's three chambers, serving ten-year terms. The Supreme Court is vested with judicial review of questions involving the constitutionality of laws, decrees, questionable action of the Executive Branch, and the arbitration of differences arising between the municipal or departmental authorities. Judges receive extremely low salaries and most take bribes as a matter of course.

## 2. Regional and Local Government

The country is divided into nine political departments. The prefect for each, appointed by the President, is responsible to him for fiscal and administrative matters and exercises the President's military authority in his own area. Each department is divided into provinces of which there are 93 throughout the country. Centralized control is further insured by the President's appointment of provincial subprefects who operate under direction of the National Minister of Government, Justice and Immigration. Provinces are divided into cantons, the smallest unit of local government. Bolivia has 983 of these local units which are administered by corregidores, appointed by the departmental prefect. Many corregidores customarily serve without formal remuneration and thus have been the governmental link perhaps most susceptible to corruption.

Municipal governments theoretically are autonomous, functioning under the direction of an elected municipal counsel. Actually the President exercises control from the capital by choosing a mayor from among the members of the municipal counsel and supervising the municipalities within the structure of the local government.

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As in the past, the Indians in some areas continue to be organized in their traditional community groups (ayllus). Historically, the Indian has not had a voice in the national government but has continued to make quasi-political decisions in his selection of local communal leaders (Jilakatas or Mallcus). This practice has preserved the tradition of local community responsibility and explains the ability of the Bolivian to enter into national political life with no great difficulty or disruption of political stability.

### C. The Government and the People

The character of the Bolivian people, their political heritage, and the underdeveloped nature of their country have made for only a tenuous reliance on constitutional procedure as the method for accomplishing change. The people's conviction that personal ambition motivates and dominates politics and government explains the lack of confidence in the ballot box and other democratic procedures. Bolivians rarely have been meticulous in their allegiance to the nation's government or its laws and processes. Envious resentment of the group in power is commonplace and the concept of loyal opposition is absent. Nearly all pay lip service to democratic methods but strikes and mob violence are the traditional channels for seeking redress of grievances, and to restore and maintain order, the government continues to use heavy-handed measures.

The desire for political power has taken precedence over the fulfillment of socio-economic goals. Self-seeking political ambitions have led to the fragmentation of political movements, creating a myriad of contending groups within every sector of the political arena and making coalitions unwieldy and governments unstable. Democratic processes are abbreviated or ignored in a fierce struggle for political dominance and survival. Politics most often have been an end rather than a means, and necessary reforms have been overlooked or neglected. The fruits rather than the social utility of office have been most prized, and struggle for political power has taken on a life-and-death intensity.

In recent years there has been some moderation in the intensity of political friction with its resulting disruption and violence. Political moderates and democratic elements have achieved ascendancy in labor and student fields, as well as control of important governmental and public positions. Some political groups have moderated their differences, if not their ambitions, in working together for non-political goals.

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This moderation may be no more than a passing phase, for political and social imperfections that contribute to disunity and disorder are deeply ingrained. They stem not only from the primitive stage of political development, but also from disruptive traits in the Bolivian character. Bolivian personalismo -- the emphasis put on individuality -- tends to fragment political movements into groups of contending personalities, divided by ambition have aggravated political regionalism and have been manifested in lack of political cohesion and flaunting of governmental authority and constitutional methods. The peaceful implementation of legislative and administrative measures has been impeded by regionalism, the multiplicity of competing groups and personalities, disregard for authority, an underdeveloped government structure, corruption and inefficiency, and inadequate information and propaganda media. Direct and drastic steps, such as the declaration of a state of siege, often have been the only alternatives to government inaction and stagnation. Although Bolivian governments have been wary of circumventing democratic processes, they traditionally have done so. Restrictions have been imposed on information media to prevent the dissemination of news prejudicial to the administration. The principal targets of these controls have been the extreme right and the extreme left. Moderate opposition groups have been allowed a degree of freedom of expression but have used this freedom judiciously.

Government policy is dedicated to introduction of change into the socio-political order and in basic attitudes which underlie that order. Old patterns persist, however, and basic socio-economic factors inhibit the government's effort to explain its policies and programs to the people. Bolivia has the largest percentage of Indian population of any Latin American country, with the exception of Guatemala. Of this element, only 8 percent have any knowledge of Spanish, the tongue spoken by whites and mestizos and the official language of the country, while about 38 percent speak only Aymara and 54 percent only Quechua. Many in the mestizo group, which represents at least 30 percent of the population, are illiterate or at best semi-literate. Little modernization has been achieved in the Bolivian school system, and only the upper-class segment of society, about 10 to 15 percent of the population, has been given adequate opportunity for education.

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In addition to being handicapped by language and literacy barriers, government efforts to reach the people are seriously restricted by the country's economic underdevelopment. The bulk of the population is engaged in primitive agriculture and lives at bare subsistence levels. The conventional news media -- press, radio, motion pictures -- are beyond the reach of all but the relatively wealthy, and only a small proportion of the literate group can afford a newspaper subscription, radio set or an occasional evening at the theatre. Less than a dozen daily and weekly newspapers are published in Bolivia with a combined circulation of not more than 125,000. Television has not been developed and there are in operation less than 30 radio broadcasting stations and 100 motion picture theaters. These media service the departmental capital cities, primarily La Paz.

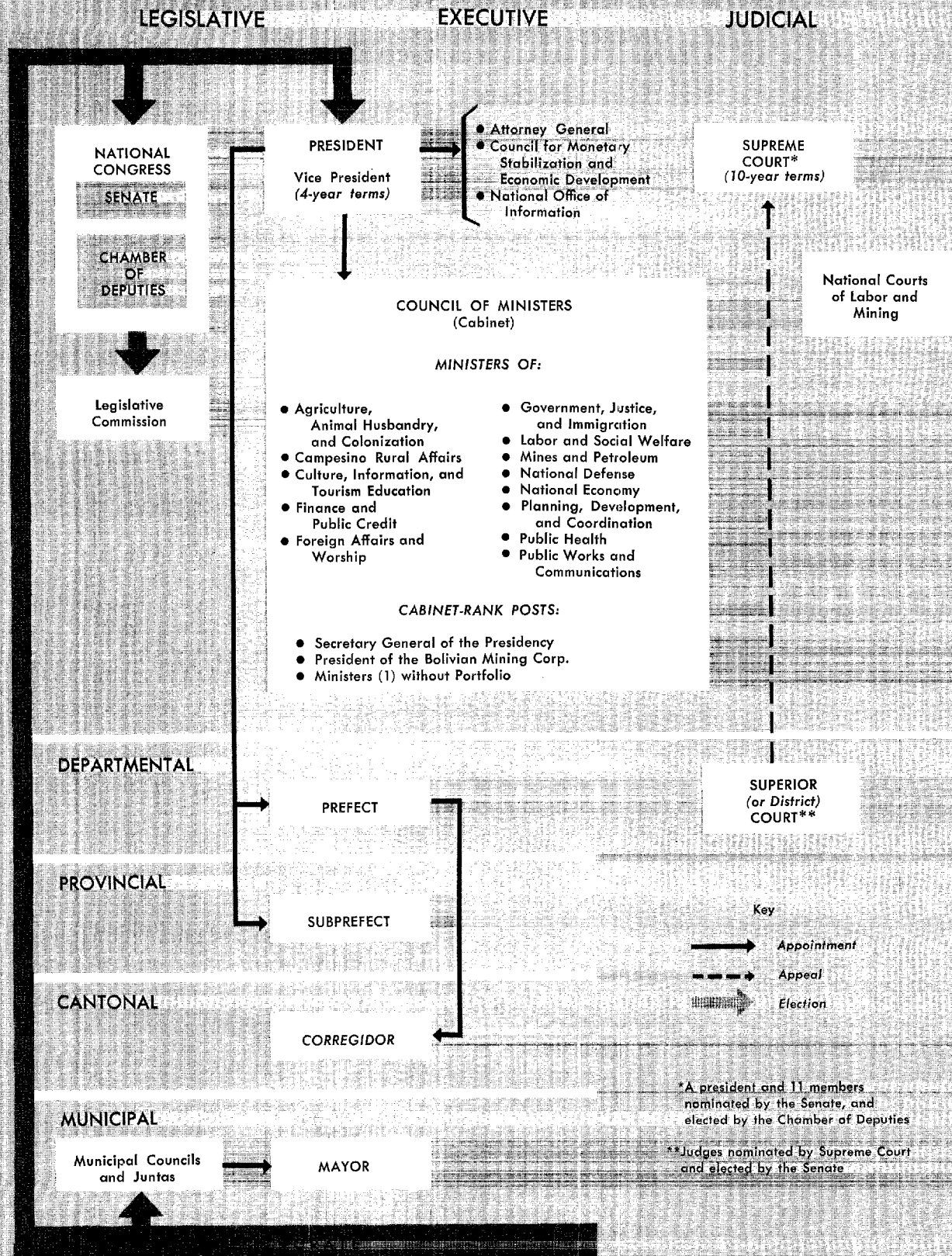
The current regime, recognizing its heavy dependence on favorable public opinion, has undertaken an intensive propaganda program which is designed to reach every segment of society and every populated corner of the country. The government has been successful in spreading throughout the country the conviction that it is genuinely dedicated to the cause of Bolivia and its people. Except for groups of the middle and most of the small upper-class, there is abundant evidence that the administration receives broad popular support. Tangible evidence of the effectiveness of this program has been popular reaction to activities of subversive groups. Whenever revolutionary attempts have been engineered by opposition elements, or even when such attempts are rumored, the people have responded readily to official appeals for preparedness or armed counteraction.

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Table 4

## Bolivia: Structure of Government, 1967



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#### D. Political Parties

Bolivian political parties present a confusing picture of plotting, splintering, factionalism and shifting coalitions. This Section first sketches an outline of key political party developments during the period 1952 through early 1969; it then describes the more important pro-government and non-communist opposition parties on Bolivia's current political scene. (Table 5 lists these parties and their leaders.) (Part III covers those parties and organizations which, through subversive insurgency, oppose the present government.)

From April 1952 until November 1964, Bolivia had a modified multiparty system with one party, the Nationalist Revolutionary Movement (MNR), heavily dominant. Other parties, some rooted in the pre-revolutionary period and others formed after 1952, coexisted uneasily with the revolutionary party. The MNR initially suppressed any serious challenge by opposition groups of either left or right, but its position weakened during the second Paz administration. One group pulled away in 1960, creating what later became known as the Authentic Revolutionary Party (PRA); the left sector broke off in March 1964 to form the National Leftist Revolutionary Party (PRIN). The MNR essentially collapsed after Paz was overthrown. Juan Lechin's PRIN had a temporary ascendancy but it and the Bolivian left were dealt a severe blow by Lechin's exile, the failure of the leftist-inspired general strike, and the temporary military occupation of the mines.

For two years after the ouster of Paz, Bolivia was ruled by a military junta. In preparation for the election of 1966, which he won by an impressive 61 percent of the vote, General Barrientos had formed a coalition of four political parties, encompassing both conservative and leftist views. Called the Bolivian Revolutionary Front (FRB), it was composed of the PRA, the Popular Christian Movement (MPS), the Social Democratic Party (PSD), the Leftist Revolutionary Party (PIR), the Chaco War Veterans Confederation, and the National Confederation of Rural Workers (Campesino Confederation). The FRB, never more than a paper organization, was dissolved in July 1967 when the PSD withdrew from the coalition, followed by the PRA. Through the remainder of his presidency, however, Barrientos was able to retain the support of most of these ex-FRB components. With the death of Barrientos in April 1969, Vice President Salinas became President. Almost immediately, political jockeying over his successor commenced. For a period of several months, it appeared that General Alfredo Ovando would take his chances in

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TABLE 5

BOLIVIAN POLITICAL PARTIES  
(As of May 1969)

<u>PARTY</u>	<u>LEADER(S)</u>
<u>Pro-Government</u>	
Popular Christian Movement (MPC) (Movimiento Popular Cristiano)	Hugo Bozo Alocer
Authentic Revolutionary Party (PRA) (Partido Revolucionario Autentico)	Walter Guevara Arze
Leftist Revolutionary Party (PIR) (Partido de la Izquierda Revolucionario)	Richard Anaya Arze
Social Democratic Party (PSD) (Partido Socialista Democratico)	President Luis Siles Salinas
<u>Non-Communist Opposition</u>	
Bolivian Socialist Falange (FSB) (Falange Socialista Boliviano)	Mario Gutierrez (exiled) Gonzalo Romero
Christian Democratic Party (PDC) (Partido Democratico Cristiano)	Remo Di Natale Benjamin Miguel
National Revolutionary Movement (MNR) (Movimiento Nacionalista Revolucionario)	Victor Paz Estenssoro (exiled) Victor Andrade (exiled) Hernan Siles Zuazo (exiled)
National Leftist Revolutionary Party (PRIN) (Partido Revolucionario de la Izquierda Nacionalista)	Juan Lechin Oquendo (exiled)

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the 1970 election. On September 26, however, the Bolivian Armed Forces, in a bloodless coup, installed Ovando as President. A number of the political parties that had supported Barrientos announced their adherence to the revolutionary government.

The four more important pro-government parties are the MPC, PRA, PIR and PSD. The MPC, formed in 1965, is a center-left party which generally supports the ideals of the 1952 Revolution. It favors economic development through industrialization and close cooperation with the United States and the Alliance. The party's support comes principally from campesinos living in the Cochabamba valley and the Department of La Paz. The PRS, an offshoot of the MNR, has its strength among miners, workers, teachers and youth groups. The PIR, organized in 1940 by a group of Marxist intellectuals, draws its support from Cochabamba and stands for industrialization and diversification of the economy. The PSD, formed in 1945 by university intellectuals, was formerly led by Siles Salinas. Considered conservative in the context of the post-1952 Revolution, the PSD program calls for higher ethical standards in government, more efficient use of U.S. aid, and more freedom for labor organizations. (The PALIC -- Agriculture-Labor Party of the Christian Left -- a new grouping of campesino and labor elements, emerged in 1967 to support Barrientos but has not achieved status as a political party.)

The non-Communist opposition parties, also four in number, are the Bolivian Socialist Falange (FSB), Christian Democratic Party (PDC), MNR and PRIN. Of these the MNR is numerically the strongest although it has been in serious eclipse since 1964. Conceived by a group of middle and upper-class intellectual dissidents, its members represent a wide range of political persuasion from right-of-center to extreme left. The party was virtually destroyed in the 1964 coup and attempts to reunify it have foundered on conflicts between leaders and over policies. The FSB, founded in 1936, gained initial strength because of its identification in the popular mind with the fascism then triumphant in Europe. Although it sought the support of the general populace, its principal strength lay in the extreme right. Following the 1964 Revolution, the party split into two principal factions; it participated in the 1966 election under the name of the Christian Democratic Community (CDC), winning 12.5 percent of the vote, second only to the FRB. Internally confused over policies and programs, the FSB maintains a basically anti-government position in Congress. The PDC was organized in 1945 by a student group and its following consists mainly of university professors and

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students, although it finds some support among the youth and middle classes in the cities of La Paz, Oruro and Cochabamba. Its platform calls for a "moral reawakening" based on Christian concepts, technological advancement, agrarian reform, and reorganization of the mines. The PRIN, which after the November 1964 Revolution became the military junta's principal threat, has never recovered its previous labor strength and is seriously factionalized. The PRIN did not participate in the 1966 election.

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### PART III

## ANALYSIS OF BOLIVIAN INTERNAL SECURITY

### I. The Forces of Subversive Insurgency

#### A. General

In the decade after 1952, Bolivia witnessed seventeen unsuccessful armed revolts, most of which were organized by the rightist Bolivian Socialist Falange (FSB). Since November 1964, however, the chief subversive threat has come from the extreme left. The six principal leftist-oriented opposition parties are discussed in Section B., below. Five of these parties either are preparing for, or actually involved in, activities aimed at the ultimate overthrow of the Bolivian Government.

Most political "outs" engage to some degree in subversive activities against the regime in power, but many are too small to constitute a real threat. Moreover, they are as badly organized, if not worse, than the pro-administration parties. They suffer internal division which inhibits coordinated action with other parties. Some prefer to guard jealously a small traditional prerogative rather than risk loss of identity in merging with another party.

Foreign influence over subversive organizations is quite extensive in comparison to the small size and impact of these groups on the political system. It extends to both Communist and non-Communist opposition groups, and takes the form of training, financial assistance, asylum, indoctrination and supplies. Cuba has played a unique role in Bolivian political affairs. Although Castro was unsuccessful in his efforts to establish a second "Sierra Maestra" in the Andean Mountains, Che's ill-planned campaign has served as an object lesson, both to the Bolivian Government and to those others who might aspire to overthrow the government through guerrilla warfare. The Soviet Union, for its part, generally seeks to discourage insurgency tactics and to emphasize political means, in the belief that displacing U.S. influence and extending Soviet influence can only be a gradual, long-term process in which diplomatic ties, expanding economic relationships, and local Communist Party actions all will play a role. The Chinese Communists, on the other hand, have fostered insurgency through propaganda and guerrilla training.

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The general strategy of the Communist parties has been to exert pressure on the government through strikes, demonstrations and propaganda. They seek to infiltrate the government, other parties, the educational system, public information media, and in particular, organized labor. Communist influence in the Bolivian labor movement, which reached its peak in early 1965, since has waned as a result of inroads by democratic elements, vigorous government measures, and labor weariness with political strife. The Communists still accord high priority, however, to regaining their position among the laboring class and to exploiting economic grievances.

Communist influence on students has been on the decline since 1957. That year witnessed the beginning of significant non-Communist participation in the chief national university student organization, the Bolivian University Confederation (CUB), which is empowered to establish relations with all labor, peasant, professional or other movements. Today only 10 percent of all university students are believed to be Communists, but Communist influence is present in most university faculties and administrations, and strong in some. For example, most of the key posts of the universities of Potosi' and Oruro are controlled by Communists or pro-Communists. Relative to their actual number, Communists exert a disproportionate influence on students through collaboration and alliances with groups of almost every political persuasion. Two primary factors -- the large number of Communist and pro-Communist professors, and the inadequacy of courses which describe the Western democratic process -- contribute to continuing Communist strength in the field of education.

In their effort to form a unified, Communist-directed opposition to the government, the Communists have penetrated other political parties, principally the National Leftist Revolutionary Party (PRIN) and National Revolutionary Movement (MNR). Their efforts have been hampered, however, by factionalism between elements in these and the several Communist parties. It should be noted that there are extremist elements in each opposition party who would join with almost any subversive movement to overthrow the existing order. In the following section, these opposition parties are discussed under two major categories: Communist-inspired (POR, PCB/S, PCB/C); and non-Communist groups and activities (FSB, MNR, and PRIN).

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## B. Opposition Parties

The Communist movement originated in the late 1930's among radical Bolivian political exiles in Argentina and Chile. The Trotskyist Revolutionary Workers' Party (POR) dates to the early 1940's and reached the peak of its influence in the period 1946-52. In 1963 the POR divided into three main factions: two factions bore the name Lucha Obrera (Workers' Struggle) -- one, recognized by the Fourth International, was led by Hugo Gonzalez Moscoso; the other, aligned with the Latin American Bureau of the international Trotskyist movement, was led by Amadeo Vargas Arze. The third, the Masas (Masses) faction, was led by Guillermo Lora Escobar. When the PRIN was formed in March 1964, the POR sought to ally itself; the Gonzalez faction even contemplated merging with the PRIN. After the government took action against leftist groups in May 1965, the Gonzalez faction turned to plans for organized antigovernment violence, establishing in September the National Guerrilla Command. In August 1966 it drew up a one-year guerrilla plan which included obtaining funds from abroad, cooperating with Peruvian guerrilla forces, establishing a command headquarters in Santa Cruz, and forming an armed youth front called the Workers' Armed Revolutionary Front.

The principal goals of the POR are to consolidate party unity, work for a united leftist front, and prepare for armed revolution. Claiming that it is the true representative of Marxism-Leninism in Bolivia, the POR condemns the PCB/S and maintains good relationships with Fidel Castro. In 1968 the POR had an estimated membership of 1-2,000 with strength concentrated in the cities and departments of La Paz, Cochabamba, Potosi and Oruro (including the nationalized mine unions in the latter two departments), the rail union at Oruro, and among university students. The POR maintains ties in Argentina from where approximately ten members have traveled to Cuba for guerrilla training since early 1968. The POR has some subversive potential, particularly in mining areas, but its effectiveness as a guerrilla force is limited by the party's small size and internal division.

The orthodox Communist Party of Bolivia (PCB) was established in January 1950 by a group of dissident elements who broke away from the Leftist Revolutionary Party (PIR), the first Marxist-oriented party to be established within Bolivia. In August 1964 a split occurred in the PCB, due principally to longstanding personal rivalries among its leaders. The existence of a separate dissident Communist Party, referred to as the Pro-Chinese Bolivian Communist Party (PCB/C) was formalized by convocation in April 1965 of the Extraordinary First National Congress of the PCB/C.

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Each of the two parties, PCB/S and PCB/C, claims that the other is a dissident faction. The PCB, as reflected in its division, has been characterized by constant jockeying for power. Party policy and tactics have been defensive rather than aggressive in character, oriented more toward survival than growth, and involved in reacting to rather than guiding events. This has resulted in confusion, apathy, discord and distrust among the rank and file. Its chief tactic has been directed toward formation of alliances with other leftist groups but generally these have not borne fruit.

The Pro-Soviet Communist Party of Bolivia (PCB/S) is led by Jorge Kollé Cueto. Typical of most Communist parties, it is based on the principles of discipline, democratic centralism, and indirect elections. Party policy calls for overthrow of the established regime and installation of a socialist system. There is deep division within the party, however, on the tactics to be employed in achieving this objective. Generally, the PCB/S is inclined toward the longer, non-violent road to power, illustrated by its enunciated policy of peaceful political struggle in the July 1966 election and the recent decision to reactivate the FLIN. Despite this reiteration of non-violence, party leaders have been compelled to acquiesce, in theory at least, to calls from within the party for guerrilla warfare. This acquiescence is reflected in adoption of the goal of developing a guerrilla potential modeled after the Venezuelan Armed Forces of National Liberation.

The party is not believed to be actively preparing guerrilla activities, but its leaders are concerned at the extent of pro-guerrilla sympathy within the party and the collaboration by some members with the Army of National Liberation (ELN.) (This Cuban-supported group is composed of elements from all opposition movements, including in addition to the PCB/S, the POR, PDB/C, and possibly the PRIN. The advanced state of ELN plans to initiate urban terrorism was exposed in July 1969 when Bolivian authorities arrested ten persons associated with the ELN and POR. Subsequent interrogation reportedly revealed the presence of several Cubans in the La Paz area.)

The PCB/S is organized into three types of cells -- factory, neighborhood and farm worker. (Committees responsible for party organization were established in 1965 in the following regions: Zone 1 -- northern Bolivia, between La Paz and Cochabamba; Zone 2 -- mining areas of Oruro, Potosí and southern Bolivia; and Zone 3 -- eastern Bolivia, including El Beni and Santa Cruz.) Its strength is concentrated heavily in the departments and capital cities of La Paz, Potosí (especially the Catavi mining complex), Oruro and Cochabamba. It has scattered strength in

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Sucre and the departments of Santa Cruz, Tarija, Pando and El Beni. The party had an estimated 3-4,000 members in 1968, mostly drawn from the worker, intellectual, student and other middle class elements; less than 10 percent were peasants. The maintenance of close ties with Moscow lends the PCB/S its principal prestige while party strength revolves around national leadership's personal following among important labor leaders. Its influence and effectiveness is diluted, however, by the presence of more active and powerful Marxist groups among labor and students. Leadership has been indirect and distant, reaching rank and file through a network of local and regional leaders whose devotion and reliability have not been absolute. Moreover, inadequate ideological training and spiritless leadership have left the party inherently unstable.

The Communist Youth of Bolivia (JCB), with a membership of some 1-2,000, is an integral element of the PCB/S. Its chief area of activity has been among students in universities and secondary schools where it has variously competed with, collaborated with, or fought against the rival youth groups of the MNR, PRIN, FSB, PSD and POR. It has been weakened by internal friction, fear of government repression, inadequate finances, and inability to regroup its forces since the PCB split and the government crackdown of May 1965.

The Pro-Chinese Bolivian Communist Party (PCB/C), led by Oscar Zamora Medinacelli, had an estimated membership of 2,000 in June 1968, of which only about 200 were active. The party, and its youth element (JCB/C) has regional committees located in La Paz, Siglo XX, Huanuni, Oruro, Cochabamba, Sucre and Santa Cruz (location of the PCB/C Military Commission.) Guerrilla training allegedly has been carried out in the Chapare area of the Department of Cochabamba; the Caranavi Zone of the Alto Beni region; the city and jungle environs of Santa Cruz; and in the Yungas of La Paz Department. In-country training includes reconnaissance exercises, political/guerrilla instruction, classes in explosives, and tactics of sabotage and urban warfare.

Party policies and objectives consistently have included the following: strict adherence to the Marxist-Leninist line and opposition to Soviet (PCB/S) revisionism and Trotskyist (POR) adventurism; resistance to U.S. "imperialism" and all Bolivian parties "in league with the imperialists"; formation of a united anti-government popular front against all reactionary elements to obtain power and establish a revolutionary government; support of strikes, and opposition to government mining reforms; expansion of party influence among miners, factory workers, peasants and

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students; improvement in party organization, financing and propaganda; and, since early 1968, development of the party's insurgent capability. Party leadership has become increasingly concerned over the extent to which pro-Cuban sentiment has appeared among its members. There is evidence that the ELN is recruiting among PCB/C members; the inactivity of the party's guerrilla arm -- the Popular Revolutionary Army (EPR) -- reportedly is causing some members to seek enrollment in the ELN.

With its penchant for more violent revolutionary action, its uncompromising stance on most issues, the lack of ideological homogeneity among its leadership and membership, and a leadership even less capable than that of its parent PCB, the PCB/C has made little headway. It is currently too disorganized to lead any type of united revolutionary struggle in Bolivia. The chief threat of the PCB/C as a subversive force lies in its strength in several mining areas, its potential support for other subversive elements (most of its own potential guerrillas are student adventurers), and its ability to invoke and take advantage of urban disorders.

The National Revolutionary Movement (MNR) has been described as an "ageing and toothless tiger", well reflecting the present state of party affairs. Those who formed the party during the years of political ferment following the Chaco War were united by their discontent, intense nationalism and desire to create a national party based on mass support. Today these same men offer no new ideas and have lost their monopoly on the ideology of national revolution.

The original MNR platform, published in June 1942, advocated land distribution through colonization; nationalization of public services; action against large private monopolies (the dominant mining interests); a system of obligatory social security; and legislation to improve the lot of the working class. The party leaders achieved many of their objectives, but after 1964 the party factionalized under Victor Paz Estenssoro, Hernan Siles Zuazo, and Victor Andrade, who today still lead their separate and unreconciled factions. Paz and Siles remain dominant figures, and efforts to rebuild the party tend to orient around them. Efforts since the July 1966 election to reunify the party have met with little success.

The MNR epitomizes traditional political tactics of opposition parties in Bolivia in its belligerent opposition to the government and total lack of ideological consistency. The bulk of MNR membership is willing to take advantage of any circumstances or temporary alliance that might damage the reputation and effectiveness of the present government. Notorious for its temporary

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support of widely disparate groups in hopes of seizing power, the MNR since 1964 has sought alliances with the FSB, PRIN, POR, PCB/C, PCB/S, PDC, and the military. While publicly it supports democratic methods of political change, in practice it resorts to extra-legal tactics of harassing the government with the intent of weakening it through demonstrations, strikes, terrorist actions, conspiratorial activities and other civil disturbances. The MNR carries on clandestine activities both within and without Bolivia: it collects funds from exiles, most of whom are located in Lima, Caracas, Montevideo, Santiago, Washington and Argentina; and it seeks financial support from Chinese and Cubans in Paris, from the Cuban Embassy in Mexico City, and from the Venezuelan Democratic Action Party.

In their efforts to regain public support, party moderates urge that the party follow peaceful activities. Other, however, argue for capturing the leadership of the leftist forces in the conviction that they ultimately will oust the present government. While the MNR has a militant youth section (MNRU), increasing strength within the universities, and a growing capability within urban areas, the party remains too fragmented to really threaten the stability of the Bolivian Government. Regardless of the actual effectiveness of MNR opposition, the Bolivian Government considers it the most serious threat to stability. The Government uses any pretext to arrest its leaders and weaken its influence.

The Bolivian Socialist Falange (FSB) has led an erratic and troubled sixty-three year existence. During the first decade of MNR rule, the FSB was the prime mover in at least 12 of the 17 attempted armed revolts and probably was implicated in the other five. For the past decade it has been the principal non-Communist subversive force in Bolivia. Following the 1964 revolution, the FSB split into two principal groups -- one, led by party chief Mario Gutierrez, tended to be intransigent, revengeful, unwilling to share power, and inclined toward violence and conspiracy. The other, under deputy chief Gonzalo Romero, favored a more pragmatic approach and sought opportunities to participate in government, even on a coalition basis. This disagreement over policy has persisted to the present, and colors the party's attitude toward the 1970 election. In February 1969, Romero resigned when Gutierrez (now in exile) declared that the FSB would support the presidential nomination of General Ovando Candia.

The ideological orientation of the FSB is unclear. Its principal objective simply is to obtain a position of power within the government. To achieve this it is able, without internal contradiction, to unite with leftists, cooperate with Communists, or associate with the military. In recent years the party never

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has adhered to a specific course of action for any significant period. The FSB appears content to criticize all government activities, without offering any substantive alternatives.

The Bolivian Government has accused the FSB of being involved in a subversive campaign. While the party is not sponsoring in-country training for its members, as early as October 1968 it was showing interest in sending members to Cuba for 90 days training in urban and guerrilla warfare. The party itself probably will not be the instigator or driving force behind any major effort to subvert or overthrow the government. It is possible, however, that the FSB might join in a leftist combination to include the PRIN, PDC, PCB/C, PCB/S and POR -- a coalition which could assume a strong insurrectionist thrust, and which could jeopardize the government.

The National Leftist Revolutionary Party (PRIN) is composed primarily of remnants of labor unions, the youth sector, and intellectuals who left the MNR with Lechin in 1964. After his expulsion from the MNR, Lechin sought political and financial support from, and alliances with, groups and parties of almost every hue in the political spectrum. He failed in these efforts, due largely to the fact that the PRIN is a collection of heterogeneous groups which have never achieved political unity and ideological homogeneity.

This weakness continues to plague the party. Rightist elements reject Lechin's overtures toward leftist parties, while leftist elements adamantly refuse to follow the party in alliance with rightist parties. Even within the individual left, center and rightist factions of the PRIN there are cleavages between pro-Lechinists and anti-Lechinists; between those willing to cooperate with the government in power and those totally opposed to it; between those favoring collaboration with certain individual leftist or rightist parties and those favoring rival parties; and even between those who espouse a legal political struggle and those who champion violent solutions.

The PRIN continues to advocate profound change in the structure of Bolivia that would bring the working class to power. It sees no alternative to popular insurrection to overthrow the government in power. Whether or not the PRIN has agreed to become part of a revolutionary front with other political groups to overthrow the Bolivian Government is not clear. Much confusion surrounds the reported signing by the PRIN in October 1968 of a pact with the Unified faction of the MNR, and the PDC.

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The PRIN finds primary strength among the labor element in the mining areas, most of which preserves its loyalty to Lechin. Party influence in the universities has increased but the PRIN is not believed to have any significant support among the campesinos. An assessment of the threat potential of the PRIN suggests that it lacks the necessary strength and discipline to oust the government by its own action, nor can it forge an alliance large enough to neutralize the government's military capability. By harassing the government through street demonstrations and terrorist activities, however, the PRIN might provoke an over-reaction which would permit it to take part in a general movement to overturn the regime. In this sense, and by reason of its anti-government orientation and opportunism, the PRIN must be acknowledged to have a significant subversive potential.

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## II. Internal Security

### A. General

The Bolivian military establishment, with a total strength of approximately 21,000, consists of a predominant army, an embryonic naval force, and a small air force. Bolivia also has a 3,600-man National Guard, primarily a police element with little or no military capability. Although Bolivia is a member of the Inter-American Defense Board and a signatory of the Rio Treaty of 1947, it is capable of contributing little more than moral support to hemispheric defense.

The Bolivian military establishment, in contrast to the situation in most Latin American countries, has enjoyed little prestige and self-confidence. The army was defeated ignominiously in two wars -- by Chile in the war of the Pacific in 1879-84 and by Paraguay in the Chaco War of 1932-35. In the revolution of 1952, the army yielded to the police and militia and remained in partial eclipse until 1964. In November of that year Rene Barrientos Ortuno, commander of the air force and later President, established a military junta. Under his leadership the strengthened army overcame the miners' militia and reoccupied the mines; in 1967 it successfully countered Che's guerrilla band. These two actions have done much to enhance military prestige.

The United States exerts predominant foreign military influence in Bolivia. Bolivian officers and eligible non-commissioned officers are trained at military schools in the United States and Canal Zone, and in Bolivia by U.S. Army and Air Force missions and U.S. mobile training teams. Arms and equipment are supplied under the U.S. Military Assistance Program (MAP). Argentina also has provided military training and some equipment.

The Minister of National Defense is assisted by under-secretaries for each service and by the Directorate General for Territorial Administration who supervises the nine military regions into which the country is divided. Administratively, the Commander in Chief of the Armed Forces is subordinate to the Minister of National Defense; operationally, he is directly under the President. The Commander in Chief exercises operational control through the commanders of the three services. The nine military regions correspond to the administrative departments. Region commanders are concerned primarily with operating the conscription system for all

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services; they do some mobilization planning and carry out administrative functions for all three services.

With the exception of priests and higher church officials, all males are subject to conscription for military service, but hardship deferments are granted liberally. The period of obligatory military service has been one year but in 1967 the term was extended to two years by presidential decree to permit more extensive training. Young men of the upper classes normally avoid conscription either by participating in the high school premilitary training program or through entrance into the service academies. Most conscripts are from the lower economic classes. Predominantly Indian, they generally are tough, amenable to discipline and eager to learn.

Nearly all Bolivian officers are graduates of the military or air academies. High school students fulfill their military obligation by participating in military training conducted on weekends and vacations during the last two years of high school. The quality of conscript training varies widely from unit to unit and the short period of service allows for only individual training. Increased training -- but probably not above company level -- will be possible if the two-year decree is extended. There have been no joint or combined training maneuvers or exercises since 1963, but this has been somewhat compensated for by frequent joint field experience; e.g., against militiamen in the 1964 coup; against dissident miners in 1965 and against Che's guerrillas in 1967.

Bolivia has no present capability to produce arms, ammunition, or specialized military equipment for its armed forces, and lacks the industrial base for development of any significant capability in the near future. Domestic oil refineries meet most needs for petroleum products although aviation gasoline, jet fuel, and lubricants must be imported. Food and clothing are supplied from domestic production but all other military equipment must be obtained from abroad. In the period between 1958 and 1966 the United States provided, under its Military Assistance Program (MAP) U.S. \$18.2 million to sustain the Bolivian armed forces.

The armed forces have no central purchasing agency, no formal depot system, and no adequate system of stock control, accountability, or supply discipline. Major items of equipment normally are purchased on the open market by agencies of the Ministry of National Defense and minor items are purchased locally by using units. Such stocks as exist

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are maintained at the central arsenal in La Paz, with some minor allocations to small national arsenals in Cochabamba and Sucre. Most vehicle routine maintenance and repair work is done within units by drivers and mechanics; heavier equipment shops for major repairs are severely handicapped by a shortage of spare parts, tools and lubricants. A central arsenal in La Paz has limited facilities for repair and maintenance of small arms and artillery and minor repairs can be made within units.

Medical services are provided almost entirely by civilian doctors who are attached or integrated into the military units. Medical installations are few, small, and poorly staffed and equipped; forward units operating against the guerrillas in 1967 had almost no medical support.

#### B. Military Forces

The Bolivian Army, which has played a prominent part in the country's history, has a three-fold mission: to defend the country, maintain internal security, and perform activities of benefit to the national economy. Army personnel strength, although comprising over 80 percent of total armed forces, is less than that of the army of any neighboring country except Paraguay. This, coupled with major deficiencies in organization, training and logistics, renders the army incapable of defending Bolivia against incursion by any of its neighbors. The army is capable, however, of maintaining domestic order provided it remains united and loyal; as currently constituted, the army could not cope with widespread insurgency. If non-Communist dissident forces were to coalesce against an unpopular government, it would be in line with army tradition to join the dissident. Almost 50 percent of the army's combat strength is deployed in or near the capital and the mining regions for protection of the government and the tin mines on which the economy depends. The remainder is thinly deployed over the vast and sparsely populated areas of northern and eastern Bolivia, principally engaged in colonization, road building, subsistence farming, and related civic action programs.

Comprising some 16,800 officers and men, the army is organized into 9 infantry divisions, 1 division of school troops, and the following separate units: 2 infantry regiments (1 motorized), 1 cavalry regiment, 1 transportation company, 1 maintenance company and the Engineer Command, consisting of 5 battalions. Division headquarters are located at Viacha, Oruro, Villa Montes, Camiri, Robore, Riberalta, Cochabamba, Santa Cruz, Trinidad and Potosí.

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The six separate units are based in or near La Paz while the Engineer Command, with headquarters at La Paz, has its battalions deployed at Tarija, Caranavi, Vallegrande, Guayaremerin, and Uncia. A special forces unit (Centro de Instruccion de Tropas Especiales - CITE) is attached to the 7th Division at Cochabamba. CITE is one of Bolivia's best units and is almost always deployed when disorders erupt.

The typical division is organized into two or three understrength regiments, a cavalry squadron and an artillery battalion. Arms and equipment, generally of European manufacture, are obsolescent and the divisions lack mobility. Other than for the two training centers for conscripts at La Paz and Cochabamba, training is erratic. Lack of adequate unit training is offset somewhat by on-the-job training in riot control and counterinsurgency operations.

The Bolivian Naval Force, with a personnel strength of 1,480 and 11 small craft, has its headquarters in La Paz. None of the naval force ships have armament and the naval infantry's Mauser rifles are largely unservicable. Naval force training largely parallels army training with conscript training left to the individual unit commander. The army provides most of the naval force's logistic support. The 1st Naval District, with headquarters in Riberalta, is responsible for the Río Beni. It has a fleet of three small river transports and a naval infantry battalion of 135 men based at Cachuela Esperanza. The 2nd Naval District, with headquarters at Trinidad, is responsible for the Río Mamoré. Its fleet consists of four river transports; a naval infantry battalion of 115 men is based at Boca Chapare. The Lake District has its headquarters and a training center at Tiquina on Lago Titicaca. Its fleet will consist of four 40-foot U.S. patrol craft.

The Bolivian Air Force, with a strength of 2,450 (of which 2,208 are nonflying personnel) is loosely organized, casually trained and poverty stricken. It boasts 78 piston engine aircraft of which 7 are fighters; the Force has no jet aircraft or bombers. Tactical units normally are disposed on airfields at El Alto, Cochabamba, Tarija, Caranavi and Riberalta.

The major basic deficiency of the air force logistic system is lack of funds which often are so short as to ground aircraft because of inability to purchase fuel and repair parts. The air force completely depends on outside sources for aircraft and spares and often resorts to cannibalization.

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Inadequate shops and tool shortages hamper maintenance; the variety of aircraft inventory complicates equipment procurement and training of technicians. Ordnance storage and handling procedures at the three principal bases at El Alto, Cochabamba and El Trompillo are inadequate and unsafe, making these areas ideal sabotage targets.

The Air Force can provide fairly effective support to ground units against small-scale insurgencies and it has a limited transport service capability. It would not prove effective, however, against widespread disorders or large-scale guerrilla operations. Its troop airlift, supply and rescue capabilities are considered fairly adequate. During the 1967 insurgency, the Air Force failed to demonstrate effective surveillance, strafing and bombing capabilities. The experience gained during that campaign, however, is reflected in an improved capacity of the Air Force to perform its primary missions of internal security and air transport.

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### C. Security and Intelligence Services

The organization and function of the security and intelligence services of Bolivia have reflected the country's political instability. Varying with each change in government or regime, their principal objective always has been the maintenance of the group in power and repression of the opposition. The present organization of the Bolivian Security and Intelligence Services is shown on Table 6.

Security Services -- With a combined strength of approximately 6,000 men, the civilian security services are organized into a National Police Agency comprising the National Guard of 3,700 members, a 1,000-man National Traffic Service and the National Department of Criminal Investigation (DNIC) of some 1,300 men. The Minister of Government, Justice, and Immigration exercises authority over the National Police Agency which is charged with law enforcement and preservation of internal security. The figure of 6,000 approximates estimated national needs but the police are not capable of coping with serious public safety or internal security problems. It is only under the control and tutelage of the Armed Forces that an effective police force can be developed.

Following the 1952 Revolution, the police were deliberately developed as a counterweight to the military. Since that time, the two forces have regarded each other with suspicion and dislike. They have been rivals for political power and each has subordinated the other during the period of its ascendancy. In 1965 the MNR's Carabineros (National Police) were disbanded by the military junta, their functions being divided into the three present components. The junta replaced a number of police officers with military commanders and authorized the Armed Forces to confiscate large amounts of essential police equipment. Today, the National Directorate of the three police services is headed by military officers.

The police traditionally have suffered from a number of key deficiencies in leadership, organization, training and equipment. Their intelligence and investigative capabilities are inadequate and police forces are widely scattered throughout the country; approximately 1,700 are stationed in La Paz. Initial responsibility for maintenance of public order rests with the National Guard, a quasi-military organization. Normally armed only with a wooden baton, the Guard exists only at the sufferance of the Armed Forces. The DNIC is responsible for investigating crime, and groups or persons threatening the security of the country. It gradually has been developing into Bolivia's

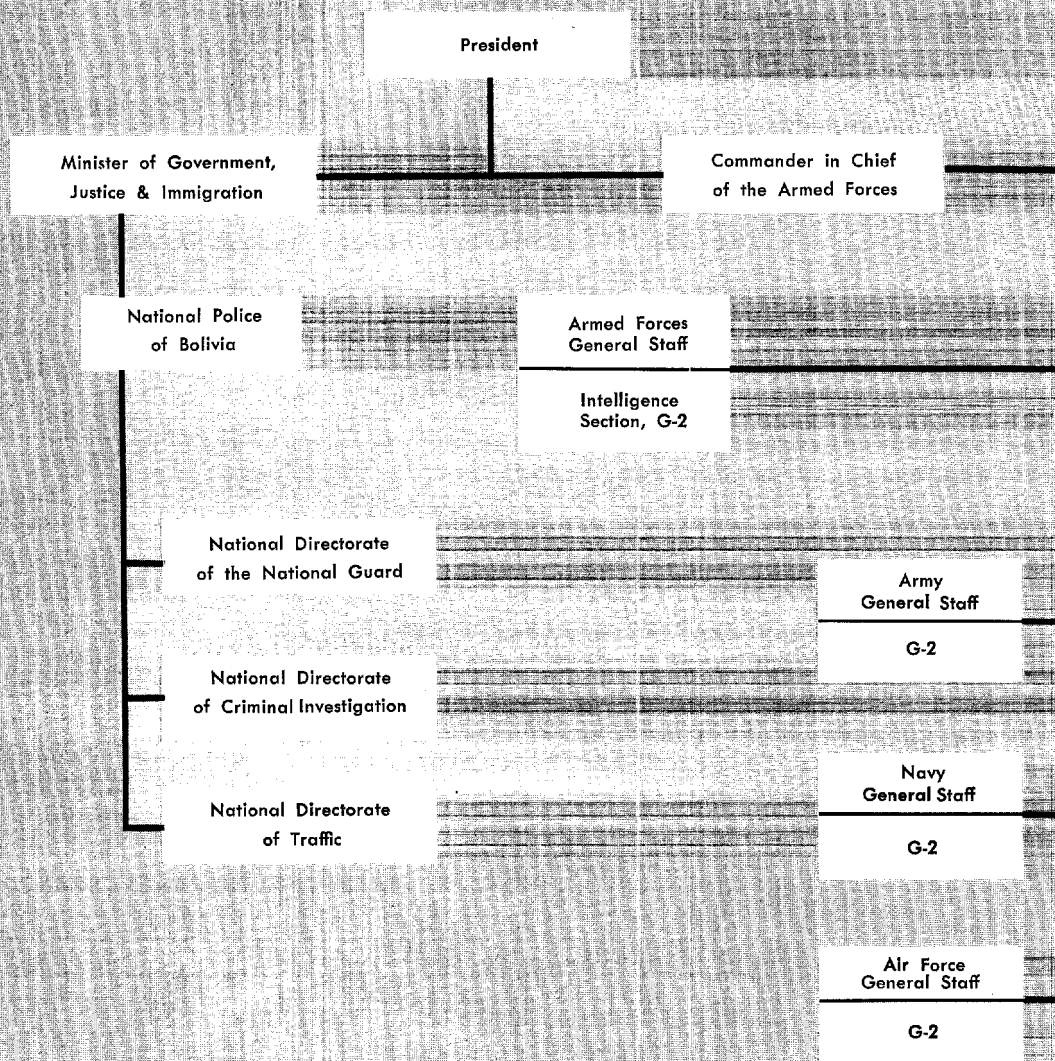
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Table 6

# Organization of the Bolivian Intelligence and Security Services



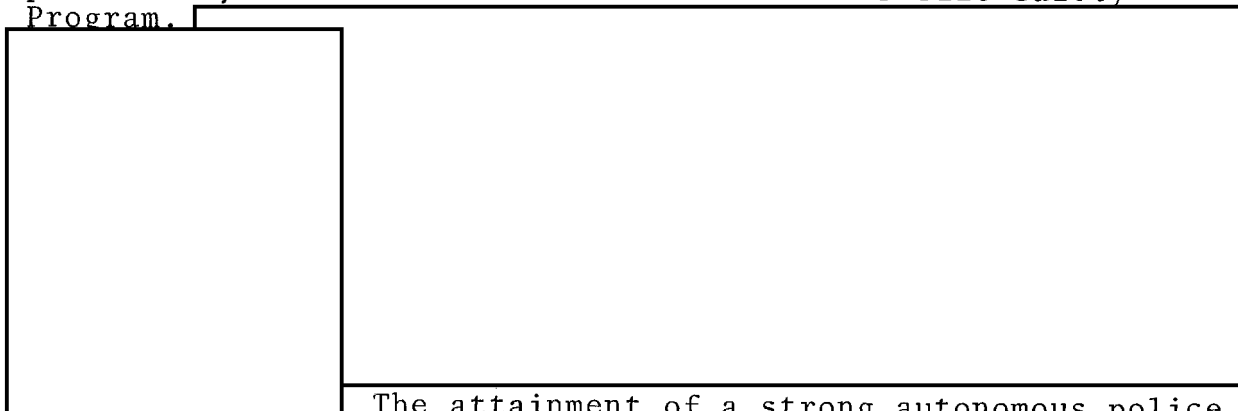
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main civilian intelligence and security organization but lacks resources, facilities, training and management. Notoriously inefficient, it has difficulty in performing basic criminal investigative missions. The DNIC is held in suspicion by government officials as well as by the average citizen since some of its personnel came from the earlier Political Control organization which had a reputation for repression and brutality. Tables 7 and 8 indicate the 1967 distribution of National Guard and DNIC personnel, respectively.

Police capabilities have been improved through assistance provided by the United States under its AID Public Safety Program.



The attainment of a strong autonomous police force is possible over the long run provided there is a period of relative stability during which traditional hostilities die, and the Armed Forces come to appreciate the need for a civilian police shield. (See Table 9, Country Team).

Intelligence Services -- Before the overthrow of the military junta by the MNR in 1952, Bolivian intelligence and security responsibilities were divided between the Army and the Carabineros. In 1954 a Department of Control and Political Security (DCP) was created but, as the result of intense public pressure, this Department was reorganized in 1959 as the Directorate General of State Information and Security (DGIS). No effective civilian intelligence organization existed in Bolivia during the period between the ousting of President Paz in November 1964 and the outbreak of Che Guevara's activity in March 1967.

The obvious weakness of government intelligence during the early stages of the Cuban-led insurgency led both civilian and military authorities to begin planning the reorganization of their intelligence services. The military and police services, forced to work together because of the insurgency, developed a sense of comradeship. Shortly after the outbreak of guerrilla

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## DISTRIBUTION OF NATIONAL GUARD PERSONNEL - 1967

TABLE 7

<u>UNITS</u>	<u>LOCATION</u>	<u>OFFICERS</u>	<u>NCO'S</u>	<u>GUARDS</u>	<u>TOTAL</u>
General Directorate of the National Guard	La Paz	40	1		41
National Directorate of the National Guard	La Paz	262	24	66	352
National School of Public Safety	La Paz	65	18	27	110
Departmental Admin	La Paz	238	229	856	1323
Departmental Admin	Oruro	53	16	130	199
Departmental Admin	Cochabamba	85	22	266	373
Departmental Admin	Chuquisaca	51	16	133	200
Departmental Admin	Potosi	46	17	170	233
Departmental Admin	Tarija	41	6	85	132
Departmental Admin	Santa Cruz	75	19	254	348
Departmental Admin	Beni	29	5	45	79
Departmental Admin	Pando	9	3	30	42
Frontier Post	San Ignacio	8	7	30	45
Frontier Post	Tupiza	4	6	25	35
Frontier Post	Villazon	4	6	15	21
Frontier Post	Yacuiba	4	2	22	29
Frontier Post	Pto. Suarez	4	1	8	13
Frontier Post	Guayaramerin	<u>2</u>	<u>2</u>	<u>14</u>	<u>18</u>
	TOTALS:	1020	397	3176	3593

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## DISTRIBUTION OF NATIONAL DEPARTMENT OF CRIMINAL INVESTIGATION PERSONNEL

1967

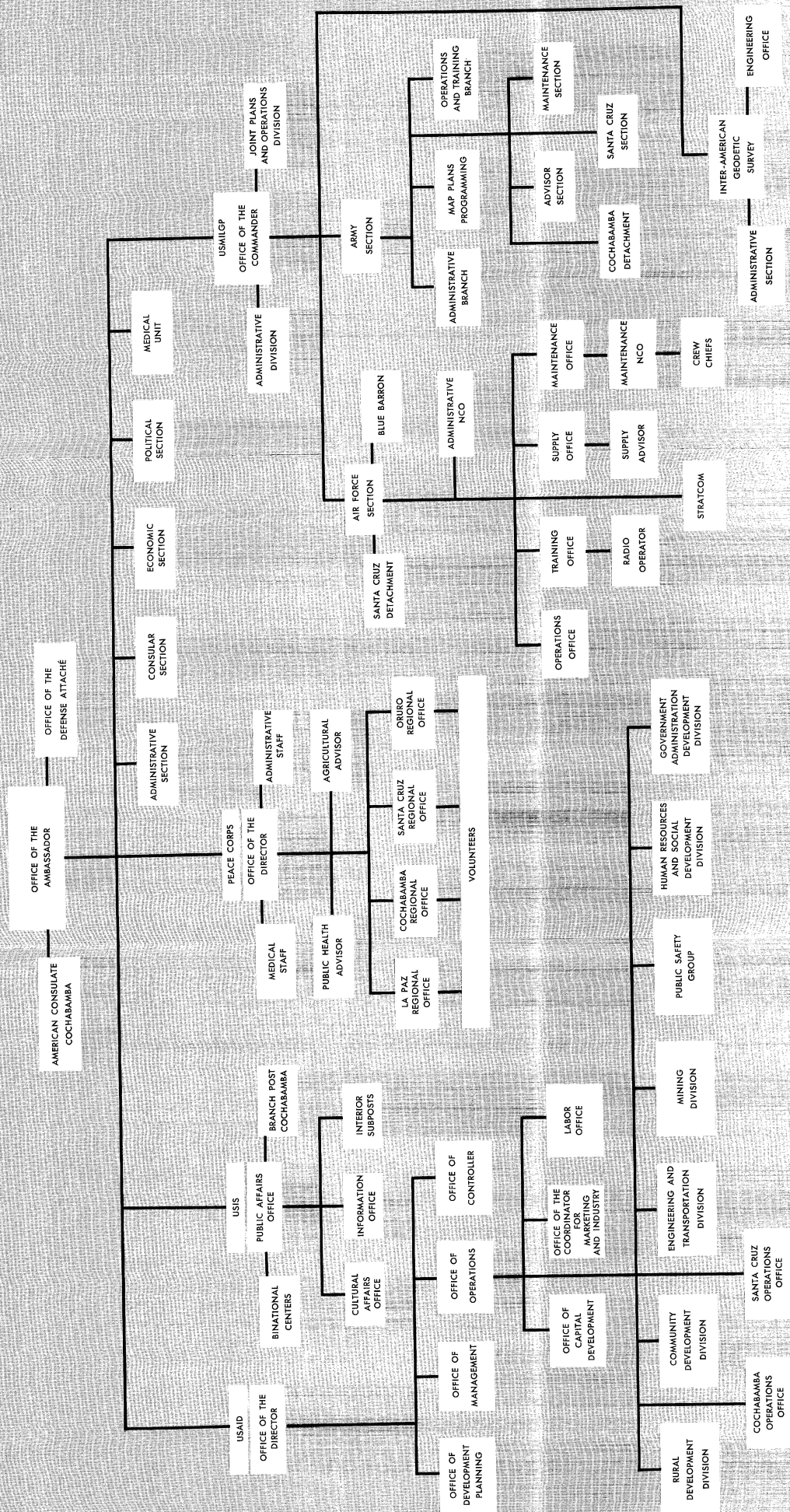
TABLE 8

<u>NITS</u>	<u>INSPECTOR GENERAL</u>	<u>INSPECTOR</u>	<u>COMMISSARIES</u>	<u>DETECTIVES</u>	<u>AGENTS</u>	<u>TOTAL</u>
a Paz	1	1	73	311	155	541
ruro			6	19	75	100
ochabamba			4	28	61	93
huquisaca			5	8	47	60
otosi			9	14	70	93
arija			2	14	43	59
anta Cruz			5	23	79	107
eni			3	5	36	44
ando			1	5	21	27
an Ignacio				3	17	20
upiza			1	4	17	22
acuiba			1	2	21	24
uerto Suarez				2	5	7
illazon			1	2	13	16
uayaramerin				3	5	8
ermejo				1	4	5
liberalta				2	6	8
TOTALS:	1	1	111	446	675	1234

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Bolivia: Country Team Organization



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activity, measures were undertaken to train personnel in intelligence techniques. The action against Che provided the Army with practical field experience in interrogation and demonstrated the importance of prompt communication, the significance of captured documents, and the value of cooperation with the campesinos. In early 1968, the U.S. Army Mission, using a Mobile Training Team, provided an intelligence course which was designed to provide Bolivia with a nucleus of trained personnel capable of developing the intelligence system of the Armed Forces. Through the efforts of the U.S. Army Intelligence Advisor, action is continuing to establish a full-time intelligence school for selected Army personnel.

As presently structured, the country's intelligence and security organizations are under the Ministry of Government, Justice, and Immigration; or the Commander-in-Chief of the Armed Forces. There is no intelligence or security organization directly under the President. Within the high command of the Armed Forces, the Supreme Council of National Defense (CSDN) is the forum for review of intelligence and security matters.

A small civilian intelligence department operates in the National Department of Criminal Investigation (DNIC). Within the National Guard, an Intelligence Department is responsible for collecting and evaluating information on political, labor union and police activities. No significant penetration of subversive groups is known to have been initiated by the National Guard. A small intelligence section within the General Staff of the Armed Forces has responsibility for analyzing Communist and leftist propaganda for the Commander-in-Chief.

There is a G-2 section in the General Staff of each of the three military services. Army G-2 has the normal duties of collection, analysis, production, distribution, operations and liaison. As of late 1968 it employed an estimated 70 persons full time. While the Army's is the most experienced, its capability is limited by inadequate funds and, most importantly, by lack of trained personnel at all echelons. It has very limited surveillance, censorship and communications capabilities; most of its sources are overt. Each of the Bolivian Army's ten divisions has one G-2 officer and one clerk. A military police element exists under the Army's organizational structure. Its units, varying in size from 90-man companies to 10-man squads, perform riot and traffic

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control duties. Bolivian overseas intelligence collection is limited to the activities of Army attaches, primarily operating in Argentina, Brazil, Chile and Peru.

The Navy's G-2 consists of one officer and one clerk; there are no intelligence officers in subordinate units. Navy G-2 is primarily an information office with collection limited to river traffic. The Air Force's G-2, comprising five individuals, is also an information office with extremely limited intelligence capability.

As a result of the joint U.S.-Bolivian Army Modernization Study conducted in January 1968 and approved for implementation, the intelligence organization of the Armed Forces will be altered effective 1970. Improvements are scheduled for the training, budgeting and communications phases of intelligence. While Bolivia's overall intelligence and security capability is not strong, definite improvements have been achieved since 1967.

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TABLE 10

AMERICAN FIRMS, SUBSIDIARIES AND AFFILIATES IN BOLIVIA\*

AIRLINES, COMMERCIAL

1. Braniff International Airways, Avenida Camacho 1421, Casilla 1967, La Paz
2. Petroleum Helicopters de Bolivia, Santa Cruz
3. World Wide Helicopters de Bolivia Ltda., Casilla 721, Cochabamba

AUDITING

Arthur Young & Co., Avenida Camacho 1377, Casilla 1390, La Paz

BANKING

1. Banco Boliviano Americano, Calle Loayza 127-133, Casillas 418-1791, La Paz
2. Bank of America, Calle Mercado 1046, Casilla 2787, La Paz
3. First National City Bank, Calle Colón Edificio Compañia Boliviana de Seguros, Casilla 260, La Paz

BUSINESS MACHINES

International Business Machines Co. de Bolivia, Avenida Camacho 1372, Casilla 1061, La Paz

CHEMICALS AND PHARMACEUTICALS

1. Liquid Carbonic de Bolivia S.A., Calle Salinas s/n, Casilla 571, La Paz
2. Laboratorios Abbott de Bolivia, Avenida 20 de Octubre 1743, Casilla 255, La Paz

CONSTRUCTION

1. Housing

- a. Builders International, Inc., Avenida Villazón 1966, Casilla 4808, La Paz
- b. Quiroga Rivas Rivas Ltda., Avenida Mariscal Santa Cruz 1365, Casilla 2452, La Paz

\*Trade List, Bureau of International Commerce, U.S. Department of Commerce, August 1968 (This list is not to be considered as all-inclusive.)

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TABLE 10  
/cont./

2. Road

- a. Demopoulos and Ferguson-Galindo, Calle Santivañez 4064, Casilla 1105, Cochabamba
- b. J.A. Jones Construction Co., Calle Jordán, Edificio Venturini, Casilla 904, Cochabamba
- c. Tippetts, Abbett McCarthy Stratton, Casilla 568, Cochabamba

3. General

William Brothers Sudamericana Ltda., Casilla 496, Cochabamba; Casilla 1215, La Paz

ELECTRIFICATION

Kuljian-Prudenci-Claros, Avenida Ballivian 5463, Casilla 1558, Cochabamba

ENGINEERING

- 1. Baker & Wibberley, Associates, Avenida Villazón 1960, Casilla 2177, La Paz
- 2. Harza-Galindo, Calle Santivanez 4064, Casilla 1105, Cochabamba

MINING (Exploration, Production, Export)

- 1. Ambo Ltd., Calle Socabaya 340, Casilla 2532, La Paz
- 2. Bolivian Tin Corp., Casilla 108, Potosí
- 3. Churquini Enterprises, Inc., Calle Potosí 814, Casilla 1603, La Paz
- 4. Compañía American Smelting Boliviana Ltda., Calle Montevideo 52, Casilla 901, La Paz
- 5. Empresa Minera Estalsa S.A., Calle Pagador 1734, Oruro
- 6. Lipez Mining Co., Calle Reyes Ortíz 59, Casilla 1215, La Paz
- 7. Sociedad Minera Comercial Ltda., "SOMCO LTDA", Calle Potosí 940, Casilla 932, La Paz
- 8. Trans-American Resources, Inc., Calle Ayacucho 320, Casilla 632, La Paz
- 9. Empresa Minera Chisum y Cia., Casilla 453, Oruro
- 10. Empresa Minera Porco, Calle Bolívar 50, Casilla 31, Potosí
- 11. South American Placers, Edificio Linale & Weiss, Avenida Montes 605, Casilla 939, La Paz
- 12. C. Tennant Co. (Bolivia) S.A., Avenida 20 de Octubre, Edificio Emusa, Casilla 2657, La Paz

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TABLE 10  
/cont./

MOTION PICTURES

Bolivia Films Ltda., Calle Comercio 943, Casilla  
1255, La Paz

PETROLEUM (Exploration, Cementing, Drilling, Production, Export)

1. B. J. Service, Inc., Yacuiba
2. Atlantic Refining Co., Calle Bueno 138, Casilla  
2950, La Paz
3. Baroid - Division of National Lead Co., Santa Cruz
4. Bolivian Gulf Oil Co., Casilla 642, Santa Cruz;  
Casilla 1458, Calle San Martin 92, Cochabamba
5. Bolivian Oil Co., S.A., Plaza Venezuela 1456,  
Casilla 892, La Paz
6. D & D Drilling and Construction Co., Casilla  
1458, Cochabamba
7. Parker Drilling Company of Bolivia, Casilla 1414,  
Santa Cruz
8. Tide Water Oil Co., Avenida Villazón 1960, Casilla  
2463, La Paz

TELECOMMUNICATIONS

1. All America Cables & Radio, Inc., Calle Socabaya  
326, Casilla 163, La Paz
2. International Standard Electric, Ltd., Calle Bueno  
144, Casilla 669, La Paz

OTHER

1. Tire recapping and retreading - Productos Técnicos  
Bolivianos, Casilla 1620, Cochabamba
2. Engineering of water well systems - Boyle Engineering  
Co., Avenida Ballivian 5421, Casilla 531, Cochabamba
3. General - (Transportation, import-export, flour  
milling, cement manufacturing, mining) Grace y Cia  
(Bolivia) S.A., Calle Mercado 1099, Casilla 852,  
La Paz

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B. Economic and Military Assistance Programs

For more than two decades, Bolivia has been the recipient of substantial foreign economic and military assistance, principally from the United States. Between 1946 and 1968 the United States provided some \$513 million in assistance, of which \$492.4 was in economic aid and \$20.8 in military support. During this same period Bolivia received \$107.2 million in assistance from various international organizations: \$72.1 million from the Inter-American Development Bank (IDB); \$17 million from the International Development Association (IDA); \$15.2 million under the United Nations Development Program (UNDP); and \$2.9 million from other UN agencies.

During the period 1961-67 Bolivia was one of four Latin American countries which received the largest share of U.S. assistance. Nearly half this sum was from USAID while one-quarter consisted of U.S. Export-Import Bank loans. The remainder was in the form of loans and grants under the Food for Freedom program, the Social Progress Trust Fund (administered by the IDB), and Peace Corps outlays. In recent years there has been a shift away from heavy Bolivian dependence on bilateral U.S. aid toward assistance from international agencies and countries other than the United States. USAID's share in total external assistance to Bolivia has dropped from 80 percent in 1963 to a 1968 figure of 61 percent. (To keep foreign assistance to Bolivia in proper perspective, over \$13 billion in aid was provided by the United States to all Latin American countries, including Bolivia, during the period 1961-67, while international agencies provided another \$6 billion.)

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The programs of American private, non-profit agencies in Bolivia frequently reach individuals and small groups who might be overlooked by large-scale government plans. In recent years there have been more than 600 American men and women working among both the rural and urban Bolivian population. These Americans were associated with some forty agencies, (see Table 11) of which over half were church sponsored or affiliated. Many of the church groups were engaged in such work as family planning, providing education and recreation for young people, and distributing food, clothing and medicine. Other groups worked at increasing and improving food production, furnishing mobile teaching teams in rural areas, and assisting in the formation of cooperatives and credit unions. Most groups had their headquarters in La Paz, Cochabamba or Santa Cruz. These programs add an important "people-to-people" ingredient to the official American assistance effort.

The story of external assistance to Bolivian development is not complete without a brief synopsis of that received from other major donors: West Germany, Japan and Great Britain. The West German Government has provided elementary and secondary school teachers, has made scholarship grants available, has staffed and equipped a mechanics training center in La Paz, and has assisted COMIBOL. The German Government also has supported private German organizations working in Bolivia, including the German Bishops' organization (MISERCOR), and the "German Peace Corps" which has sent volunteers to work in Chuquisaca Department and in the Santa Cruz area. Japanese Government economic assistance takes the form of lines of credit. The Japanese Government also has helped modernize the La Paz telephone system and the Bermejo sugar complex; Bolivians have received technical training in Japan under GOJ grants. The British Government has provided technical assistance to the agriculture,

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TABLE 11

AMERICAN VOLUNTARY AGENCIES WORKING IN BOLIVIA

CHURCH SPONSORED OR AFFILIATED

1. Andes Evangelical Mission, Cochabamba
2. Catholic Medical Mission Board, La Paz
3. Catholic Relief Services, La Paz
4. Christian Children's Fund, ---
5. Church of God (Holiness), La Paz
6. Church World Service, Cochabamba
7. CUNA International, Cochabamba
8. Daughters of Charity of St. Vincent de Paul, Cochabamba
9. Dominican Fathers, La Paz
10. Dominican Sisters, Santa Cruz
11. Franciscan Fathers, La Paz
12. Franciscan Sisters, La Paz/Mapiri
13. Lay Mission - Helpers Association, Santa Cruz
14. Loretine Sisters, La Paz
15. Maryknoll Fathers, Cochabamba
16. Maryknoll Sisters, Cochabamba
17. Mennonite Central Committee, Santa Cruz
18. Methodist Church, La Paz
19. Missionary Sisters of the Immaculate Conception of the Mother of God, La Paz
20. National Jewish Welfare Board, ---
21. Papal Volunteers for Latin America, (Lima, Peru)
22. Seventh Day Adventist Welfare Service, La Paz
23. Sisters of Charity of St. Elizabeth, La Paz
24. Sisters of St. Mary of the Third Order of St. Francis, La Paz
25. Sisters of The Most Precious Blood, La Paz
26. World Gospel Mission, Santa Cruz
27. Xaverian Brothers, La Paz

OTHER AGENCIES

1. American Foundation for Overseas Blind, ---
2. American Institute for Free Labor Development, La Paz
3. American Leprosy Mission, ---
4. American Women's Hospitals Service, La Paz
5. Cooperative League of the USA, La Paz
6. Direct Relief Foundation, ---
7. Heifer Project, Cochabamba
8. Meals for Millions Foundation, ---
9. Medical and Surgical Relief Committee, ---
10. New Tribes Mission, Cochabamba
11. National Rural Electric Cooperative Association, La Paz

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TABLE 11  
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12. Public Administration Service, La Paz
13. Summer Institute of Linguistics, Riberalta, Beni
14. World Neighbors, La Paz
15. W. K. Kellogg Foundation, ---
16. Young Womens Christian Association of the U.S.A., ---

Source:

Latin America-Technical Assistance Programs of U.S. Non-Profit Organizations-Directory 1967; Technical Assistance Information Clearing House of the American Council of Voluntary Agencies for Foreign Service Inc. New York, N.Y.

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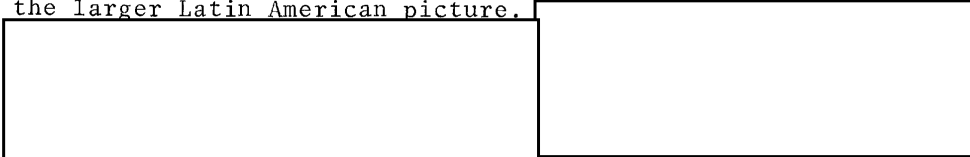
mining and education sectors, as well as participant training grants. The French Government has extended scholarships for study in France and has supplied technical assistance to a high altitude biological research laboratory in La Paz. Other foreign countries which have rendered limited assistance to Bolivia, principally in the military training and equipment area, are Argentina, Brazil, Israel, Peru, Uruguay and Venezuela.

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#### IV. Observations and Reflections

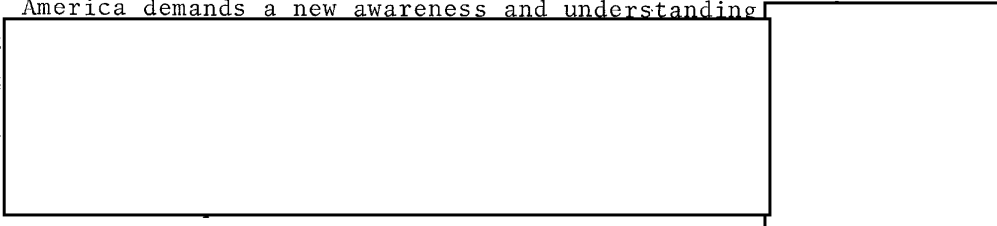
This concluding chapter of the Handbook brings Bolivia's experience into clearer focus by looking at it as part of the larger Latin American picture.



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The character of change now taking place throughout Latin America demands a new awareness and understanding



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Possibly the most potent of these forces is a resurgent nationalism, sweeping across Latin America, transcending ideologies and boundaries. The ascendancy of populist military regimes is a second dominating influence which is altering the political scene in many countries. Urbanization is another phenomenon which has brought pressures for social and political change. One of the most dramatic developments of the past decade is the conversion of the Roman Catholic Church from a staunch defender of the established order to an outspoken advocate of social change. In sum, Latin America is in a process of an upheaval which requires new understanding, and new approaches on the part of those who are involved in the affairs of that region.

The nationalism of present day Latin America is an ill-defined love of country, rooted to the new accessibility of the Latin illiterate by radio and other means to information about the rest of the world. Though he may be a captive of his slum or immobilized on his mountainside, no longer is he isolated from outside thought and ideas. He is becoming aware that life can be better, that he can have improved health, a more rewarding job, and greater educational opportunities for his children. His leaders, responding to demands for social and economic reform, often seem to act recklessly and irrationally. Taken in the name of national interests, their actions often have only deepened and intensified domestic instability.

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This new nationalism finds expression in the denunciation of American policy and the expropriation of American-owned companies and properties. The United States has become a convenient target for Latin frustrations in their own homelands, because of the promises of the Alliance for Progress which could not be fulfilled. This frustration derives from the fact that the typical Latin American nationalist leader operates from two basic but false assumptions, one political, the other economic. First, he asserts that the hemisphere is comprised of equal, sovereign and independent countries. Second, he assumes that his country must become self-sufficient in agricultural and industrial production. As a result of these two assumptions, he places much of the blame for his country's plight on interference from the outside world. As the leader of a developing nation, he refuses to accept the fact that the struggle to build a nation must be won by the combined efforts of the people themselves plus a generous inflow of assistance from developed nations.

Today, more than half of the 270 million people of Latin America live in nations governed either directly by military juntas or by military-dominated regimes. This is a new breed of military officers representing a sharp break from the classic stereotyped "strong-man" dictator of past years. Strongly nationalistic in outlook, and for the most part originating from the middle class, these officers appear dedicated to their country's social and economic revitalization. The question has been raised of course, as to whether they are truly motivated by patriotism and high ideals or, rather, are simply consumed by chauvinistic nationalism. Some observers fear for the cause of democratic institutions and sense that these military leaders will be reluctant to relinquish their new power. Others, however, are impressed by this new officer corps' demonstration of an increasingly high degree of professionalism and their understanding of the social and economic, as well as, military facts of life about their country. The Rockefeller report appraises them in the following terms: "Motivated by increasing impatience with corruption, inefficiency, and a stagnant political order, the new military man is prepared to adapt his authoritarian tradition to the goals of social and economic progress." These military leaders use the word "revolutionary" to describe the nature of their objectives. There is persuasive evidence that they indeed deserve their new title - "revolutionaries in uniform".

Seemingly insurmountable problems, largely associated with the causes and consequences of urbanization, and the difficulties in implementing land reforms, confront both the civilian and military governments of the Latin states. The

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governments of many of these countries face dreary cycles of demoralizing inflation, lagging agricultural production, inadequate foreign exchange, rising debt burdens, and dependence on single products or crops often in world oversupply. The economic and technological gulf between these countries and the more advanced industrial states continues to widen. Purchasing power is inadequate and poorly distributed, and the credit and market system leads to exploitation, high prices and low return to the farmer. A growing gap exists in income and living standards, between rural and urban areas, and between different regions in a single country. Deficiencies in economic institutions prevent economic growth commensurate with the region's resources and its population growth needs.

This population explosion, unequalled anywhere in the world, has forced many peasants off the land and into urban centers, and has vitiated the effectiveness of national development programs. Contrary to general opinion, however, rural-urban migration is not the primary underlying factor in the rapid inflation of city populations, either in Latin America or in other underdeveloped regions. Rather, it is the result of sheer biological increase at a rate unprecedented in man's experience.

These masses of unskilled, underemployed and poverty-stricken slum dwellers offer a ripe target for subversive agitators who have shifted their efforts from the rural areas to the cities. (Contrary to the expectations of leaders such as Che, the supposedly seething peasantry has proven to be quite conservative so long as it has been able to scratch out a meager existence from a small plot of ground.) The key to political power now lies in the cities and an increase in the scope and intensity of urban terrorism can be expected. It will involve those elements of the population -- extremist students, trade unionists, and disenchanting intellectuals -- who traditionally have opposed the established order and whom the Communist parties will attempt to unite in a common cause. As in the past, the city-based universities will provide a convenient "take-off" point for a general urban struggle, reflecting particularly the frustrations and impatience of the young. Other than in the case of military coups, it can be assumed that the forces which undertake many future revolutions in Latin America will develop and operate primarily from the festering slums of the growing cities.

At present there is deep division among leftist elements who have been forced to re-assess their revolutionary strategies in light of these forces of change. Some groups continue to

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urge rural guerrilla warfare while others insist that the struggle must focus on the cities alone. It is generally believed that these subversive groups are not capable now of conducting major insurgency operations, nor of forming armed units without significant outside support. In this context, Castro's role deserves comment. Sobered by his Bolivian failure, as well as by Soviet interest in good relations with Latin American states, he apparently has shifted his doctrinal approach to revolution in Latin America. Acknowledging that each country should develop its own revolution, in its own style, according to its own conditions, he admits that there may be more than one path to revolution. He warns, however, that Cuba can wait patiently for revolution in other Latin nations, and continues to train revolutionaries for export. It is worthy of note that the majority of the urban-based terrorist groups, referred to above, are pro-Castro in outlook.

The Bolivian Revolution of 1952 squarely faced the problems caused by poor education, feudal land tenure, difficulties in communications, social isolation and extreme demographic pressures. Encouraging progress toward solution of these problems were being made under Barrientos. The Ovando government has not been willing or able to reinstitute the sound economic policies of the Barrientos government. Instead, it has undertaken a deliberate campaign to destroy the Barrientos image and to liquidate the regime's potential enemies. Ovando's rhetoric has failed to detail any reform of the government structure. There is yet no evidence that Ovando has any deep appreciation of the economic disaster he is creating. His nationalization action halted Bolivia's single most important development project -- the oil industry -- with damaging consequences for much-needed foreign investment and aid. His willingness to sacrifice economic requirements to short-term political goals is certainly leading to higher budget deficits, permissive labor policies, and accelerated inflation. Bolivia is a classic example of the small country where fierce nationalism, impatience for progress, and the need for outside aid -- the pivotal elements of development -- have led to a quickening deterioration.

Still lacking popular support, the government faces opposition from within its own ranks and the possibility of counter coups cannot be ruled out. While the more pragmatic members of the cabinet may succeed in moving toward more moderate positions, there is no present evidence that the Ovando government is willing or capable of taking those measures necessary to achieve political stability or even retain power.

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Signs of discontent appear increasingly among the middle class and business community, the government's relations with the campesinos and unionized workers grow more strained, and even the possibility of renewed rural insurgency and urban terrorism cannot be discounted. The government has promised a massive literacy campaign and a reform of the government structure, but tremendous obstacles stand in the way of achieving these objectives. Bolivia thus appears to be suffering through yet another period of political and social instability, a condition which has characterized the history of that unhappy land.

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APPENDIX A

CHRONOLOGY OF KEY EVENTS IN BOLIVIA SINCE 1940

1940	National Revolutionary Movement (MNR) founded
1946 (Jul)	MNR-supported regime ousted by revolt
1950	Communist Party of Bolivia founded (origin actually dates to late 1930's among radical Bolivian political exiles in Argentina and Chile)
1951	Victor Paz Estenssoro, MNR candidate, wins plurality in presidential election; military junta assumes power to block MNR victory
1952 (Apr)	MNR, led by Hernan Siles Zuazo, stages successful revolution with armed worker and police support; Estenssoro returns from exile in Argentina to assume presidency
1953	Complete economic collapse of Bolivia and internal anarchy averted by emergency financial aid from United States
1956 (Jun)	MNR candidate Siles Zuazo elected President; MNR wins all Senate and most Chamber of Deputy seats in first congressional election since the Revolution of 1952
1960 (Aug)	Paz Estenssoro begins second term as President
1961 (Aug)	Constitution of 1961 promulgated
1964 (May)	Paz Estenssoro elected President for third time; General Rene Barrientos Ortuno elected Vice President
(Nov)	Military ousts Paz, establishes military junta under Barrientos and Armed Forces Commander General Alfredo Ovando Candia
1965 (May)	Leftist labor leaders imprisoned and exiled; military occupation of tin mines
1966 (Jul)	Barrientos elected President

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1967 (Jan)	Culmination of struggle over leadership of Bolivian insurgency; Ernesto "Che" Guevara assumes control
(Mar)	Outbreak of Castroist insurgency
(Apr)	President Barrientos boycotts hemispheric summit meeting because Bolivian access to the sea not included on agenda
(Oct)	Capture and death of "Che" signals defeat of the Castroist guerrilla movement
1968 (Jul)	Government stability threatened by scandal over Minister of Government's transmittal of Che's diary to Cuba
1969 (Apr)	Barrientos dies in helicopter crash. Vice President Siles assumes presidency in constitutional succession
(Sep)	President Siles deposed by military coup; General Ovando, Commander of the Armed Forces, assumes presidency
(Oct)	Seizure of Gulf oil subsidiary signalling possible nationalization of other foreign-owned industries

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APPENDIX C

Recommended Maps and Charts

For accurate topographic detail, the best map coverage of Bolivia is provided by the Carta Nacional, Bolivia, published at 1:50,000 by the Instituto Geográfico Militar (IGM) in collaboration with the Inter-American Geodetic Survey. Sheets of this series are highly accurate, but coverage is limited to the highlands in the area west of La Paz and south of Cochabamba. New areas are being mapped, but it will take several years to complete the series. As sheets become available the Army Map Service (AMS) revises them to meet U.S. military requirements and distributes them as AMS Series H731.

For complete topographic coverage of Bolivia, the USAF Operational Navigation Chart (ONC) series published at 1:1,000,000 by the USAF Aeronautical Chart and Information Center (ACIC) is best, but the charts contain numerous mistakes and omissions. For example, two nonexistent railroads (not even under construction) are shown running northward and westward from Santa Cruz, and some spot elevations are inaccurate. All of Bolivia is also covered by the Mapa Aproximado de Bolivia en 70 Hojas at 1:250,000. This series includes numerous place names, but the poor quality ozalid sheets are obsolescent and depict relief sketchily.

Only a few good thematic maps exist for Bolivia. Vegetation-distribution maps for the whole country are particularly scarce; those that do exist are not in agreement one with the other. Population maps, also scarce, are usually at such small scales as to provide only a very general and inexact impression of population distribution.

The ONC 1:1,000,000 sheets are reasonably complete for location of airfields over 2,000 feet in length, but the latest edition of the Airfields and Seaplane Stations of the World always should be consulted for up-to-date information. Aeronautical charts soon become obsolete unless continuously revised with construction of new airfields and abandonment of old ones. No available charts show all of the airstrips under 2,000 feet in length. For contact flying -- navigating by visual comparison of ground features with those shown on charts -- the ONC's are generally inadequate because they lack detail, especially over the broad forested areas of eastern Bolivia.

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APPENDIX C

El Transporte Fluvial en Bolivia, a four-volume work published by the Servicio de Hidrografía (Hydrographic Service) of the Bolivian Navy, contains numerous medium-scale (1:250,000) fold-out strip charts of the major navigable rivers of Bolivia. These charts contain many soundings and show all of the twists and turns of the rivers in great detail. Areas of special interest and important navigational hazards such as rapids and falls are represented at larger scales (for example, 1:10,000) on separate charts.

1. Instituto Geográfico Militar, Carta Nacional, Bolivia, 1:50,000, 1963-68. About 190 sheets. U.

2. Army Map Service, Bolivia, 1:50,000, Series H731, 1963-68. Thirty-eight sheets converted from IGM series. U/NFD except Bolivia.

3. (Authority Unknown), Mapa Aproximado de Bolivia en 70 Hojas, 1:250,000, 1933-51. Seventy ozalid sheets. U.

4. Aeronautical Chart and Information Center, USAF Operational Navigation Chart (ONC), 1:1,000,000, 1967. Sheets ONC N-25, N-26, P-26, and P-27. U.

5. Comando de la Fuerza Naval Boliviana, Servicio de Hidrografía Naval, El Transporte Fluvial en Bolivia, 4 volumes, La Paz, 1964-67. U.

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APPENDIX D

RECOMMENDED FILMS

1. Amazon Family. Julien Bryan/International Film Foundation, 1961, 16 mm, sound, color, 19 minutes. CIA film P7063. OUO.  
(Simple existence led by jungle latex gatherers.)
2. Bolivia. McGraw-Hill Text-Films, 1965, 16 mm, sound, color, 15 minutes. CIA film X0044. OUO.  
(Communication and transportation problems.)
3. Bolivia. Julien Bryan/CIAA, 1943, 16 mm, sound, black and white, 19 minutes. CIA film E7351. OUO.  
(Physical features, resources, industry, cities.)
4. Bolivia: Changes in Agriculture. Univ. of Wisconsin; AID, 1963, 16 mm, sound, color, 21 minutes. CIA film V6562. OUO.  
(Marketing problems in lowlands; development activities.)
5. Bolivia - David Brinkley's Journal. NBC/TV, 1963, 16 mm, sound, black and white, 29 minutes. CIA film S6327. OUO.  
(Review of events and consequences of 1952 Revolution.)
6. Bolivian Military Coup, 1964. CBS/TV, 1964, 16 mm, sound, black and white, 17 minutes. CIA film T6867. C.  
(Barrientos, Lechin speak; riots and demonstrations.)
7. Economic Diversification (Un Poquito de Diversificacion Economica). Telecine, Ltd. (Bolivia/USIA), 1957, 16 mm, sound, black and white, Spanish track, 35 minutes. CIA film K7193. OUO.  
(Ex-tin miner re-establishes himself as lowlands farmer.)
8. Geography of South America: Countries of the Andes. Coronet Films, 1958, 16 mm, sound, color, 11 minutes. CIA film P0634. OUO.  
(Bolivian people in their historic and geographic environment.)
9. Johnny Learns to Read - Juanito Sabe Leer. USIA, 1956, 16 mm, sound, black and white, Spanish track, 31 minutes. CIA film P6821. OUO.  
(Construction, operation of AID-sponsored Indian school.)
10. The High Plain. Julien Bryan/CIAA, 1942, 16 mm, sound, black and white, 19 minutes. CIA film E7155. OUO.  
(Life among Aymara Indians - culture, traditions, occupations.)

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